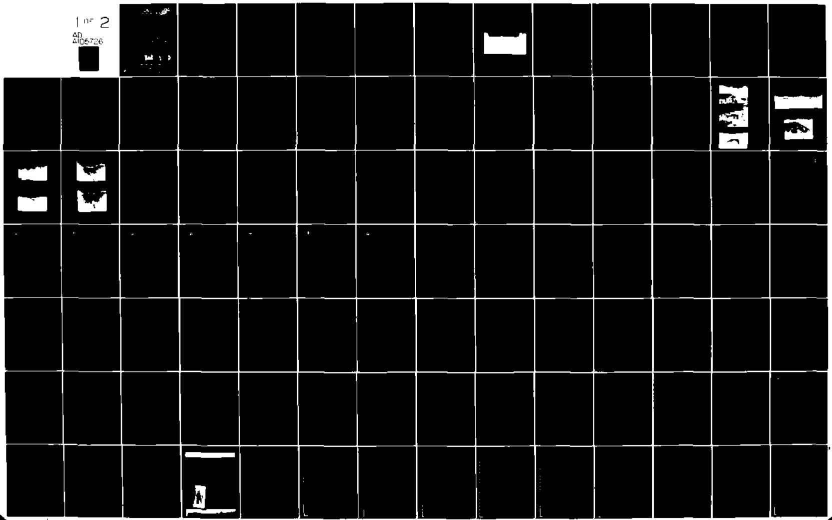
AD-A105 726 STETSON-DALE UTICA NY F/G 13/13

NATIONAL DAM SAFETY PROGRAM. ROUND POND CREEK DAM (INVENTORY NU--ETC(U)

JUN 81 J B STETSON DACW51-81-C-0009

UNCLASSIFIED NL



LEVEL II

LAKE ONTARIO BASIN

AD A105726

ROUND POND CREEK DAM

NEW YORK

INVENTORY No. NY 710

PHASE I INSPECTION REPORT
NATIONAL DAM SAFETY PROGRAM

NEW YORK DISTRICT CORPS OF ENGINEERS

SECURITY CLASSIFICATION OF THIS PAGE (When Data Entered)

REPORT DOCUMENTATION PAGE		READ INSTRUCTIONS BEFORE COMPLETING FORM
1. REPORT NUMBER	2. GOVT ACCESSION NO. AD-A105726	3. RECIPIENT'S CATALOG NUMBER
4. TITLE (and Subtitle) Phase I Inspection Report Round Pond Creek Dam Lake Ontario Basin, Monroe County, N.Y. Inventory No. 710		5. TYPE OF REPORT & PERIOD COVERED Phase I Inspection Report National Dam Safety Program
		6. PERFORMING ORG. REPORT NUMBER
7. AUTHOR(s) JOHN B. STETSON		8. CONTRACT OR GRANT NUMBER(s) DACW51-81-C-0009
9. PERFORMING ORGANIZATION NAME AND ADDRESS Stetson-Dale 185 Genesee Street Utica, New York 13501		10. PROGRAM ELEMENT, PROJECT, TASK AREA & WORK UNIT NUMBERS
11. CONTROLLING OFFICE NAME AND ADDRESS Department of the Army 26 Federal Plaza New York District, CofE New York, New York 10287		12. REPORT DATE 30 June 1981
		13. NUMBER OF PAGES
14. MONITORING AGENCY NAME & ADDRESS (if different from Controlling Office) Department of the Army 26 Federal Plaza New York District, CofE New York, NY 10287		15. SECURITY CLASS. (of this report) UNCLASSIFIED
		15a. DECLASSIFICATION/DOWNGRADING SCHEDULE

16. DISTRIBUTION STATEMENT (of this Report)

Approved for public release; Distribution unlimited.

17. DISTRIBUTION STATEMENT (of the abstract entered in Block 20, if different from Report)

National Dam Safety Program. Round Pond Creek Dam (Inventory Number NY 710) Lake Ontario Basin, New York. Phase I Inspection Report

18. SUPPLEMENTARY NOTES

19. KEY WORDS (Continue on reverse side if necessary and identify by block number)

Dam Safety
National Dam Safety Program
Visual Inspection
Hydrology, Structural Stability
Round Pond Creek Dam
Monroe County
Lake Ontario Basin

20. ABSTRACT (Continue on reverse side if necessary and identify by block number)

This report provides information and analysis on the physical condition of the dam as of the report date. Information and analysis are based on visual inspection of the dam by the performing organization.

The Phase I Inspection of the Round Pond Creek Dam did not indicate conditions which would constitute an immediate hazard to human life or property.

DD FORM 1 JAN 73 1473 EDITION OF 1 NOV 65 IS OBSOLETE

412 -

SECURITY CLASSIFICATION OF THIS PAGE (When Data Entered)

The hydrologic/hydraulic analysis indicates that the spillway is capable of passing the Probable Maximum Flood (PMF) with 1.8 feet of freeboard. Therefore, the spillway is assessed as adequate according to the Corps of Engineers' screening criteria.

PREFACE

This report is prepared under guidance contained in the Recommended Guidelines for Safety Inspection of Dams, for Phase I Investigations. Copies of these guidelines may be obtained from the Office of Chief of Engineers, Washington, D.C. 20314. The purpose of a Phase I Investigation is to identify expeditiously those dams which may pose hazards to human life or property. The assessment of the general condition of the dam is based upon available data and visual inspections. Detailed investigation and analyses involving topographic mapping, subsurface investigations, testing, and detailed computational evaluations are beyond the scope of a Phase I Investigation; however, the investigation is intended to identify any need for such studies.

In reviewing this report, it should be realized that the reported condition of the dam is based on observations of field conditions at the time of inspection along with data available to the inspection team. In cases where the reservoir was lowered or drained prior to inspection, such action, while improving the stability and safety of the dam, removes the normal load on the structure and may obscure certain conditions which might otherwise be detectable if inspected under the normal operating environment of the structure.

It is important to note that the condition of a dam depends on numerous and constantly changing internal and external conditions, and is evolutionary in nature. It would be incorrect to assume that the present condition of the dam will continue to represent the condition of the dam at some point in the future. Only through frequent inspections can unsafe conditions be detected and only through continued care and maintenance can these conditions be prevented or corrected.

Phase I inspections are not intended to provide detailed hydrologic and hydraulic analyses. In accordance with the established Guidelines, the Spillway Test flood is based on the estimated "Probable Maximum Flood" for the region (greatest reasonably possible storm runoff), or fractions thereof. Because of the magnitude and rarity of such a storm event, a finding that a spillway will not pass the test flood should not be interpreted as necessarily posing a highly inadequate condition. The test flood provides a measure of relative spillway capacity and serves as an aid in determining the need for more detailed hydrologic and hydraulic studies, considering the size of the dam, its general condition and the downstream damage potential.

TABLE OF CONTENTS

APPENDIX

PHASE I INSPECTION REPORT

NATIONAL DAM SAFETY PROGRAM

Name of Dam:	Round Pond Creek Dam I.D. No. NY 710
State Located:	New York
County:	Monroe
Watershed:	Lake Ontario Basin
Stream:	Round Pond Creek
Date of Inspection:	November 20, 1980

ASSESSMENT OF GENERAL CONDITIONS

The Phase I Inspection of the Round Pond Creek Dam did not indicate conditions which would constitute an immediate hazard to human life or property.

The hydrologic/hydraulic analysis indicates that the spillway is capable of passing the Probable Maximum Flood (PMF) with 1.8 feet of freeboard. Therefore, the spillway is assessed as adequate according to the Corps of Engineers' screening criteria.

The following remedial work should be undertaken within one year during normal maintenance operations:

1. Motor bike traffic should be restricted on the facility. The erosion due to this traffic should be repaired.

2. Provide bank protection for the drainage ditch at the toe of the downstream slope near the center of the dam.

3. Bank protection at the control outlet should be repaired. Steps should be taken to control vandalism at the site.

4. A flood warning and emergency evacuation system should be implemented to alert the public should conditions occur which could result in failure of the dam.

5. A formalized inspection system should be initiated to develop data on conditions and maintenance operations at the facility, including the slopes and the area immediately downstream from the toe of the embankment. Deficiencies and the remedial measures undertaken to correct these deficiencies should be well documented to provide historical background on which future evaluations may be made.

Dale Engineering Company

John B. Stetson, President

Approved By: Col. W. M. Smith, Jr.
New York District Engineer

Date: 30 JUN 1981

1. Overview of the embankment. Outlet control in foreground. Emergency spillway in background. Impoundment to the left.

PHASE I INSPECTION REPORT
ROUND POND CREEK DAM I.D. NO NY 710
LAKE ONTARIO BASIN
MONROE COUNTY, NEW YORK

SECTION 1: PROJECT INFORMATION

1.1 GENERAL

a. Authority

Authority for this report is provided by the National Dam Inspection Act, Public Law 92-367 of 1972. It has been prepared in accordance with a contract for professional services between Dale Engineering Company and the U.S. Army Corps of Engineers.

b. Purpose of Inspection

The purpose of this inspection is to evaluate the existing condition of the Round Pond Creek Dam and appurtenant structures, owned by the Town of Greece, New York, and to determine if the dam constitutes a hazard to human life or property and to transmit findings to the U.S. Army Corps of Engineers.

This Phase I inspection report does not relieve an Owner or Operator of a dam of the legal duties, obligations or liabilities associated with the ownership or operation of the dam. In addition, due to the limited scope of services for these Phase I investigations, the investigators had to rely upon the data furnished to them. Therefore, this investigation is limited to visual inspection, review of data prepared by others, and simplified hydrologic, hydraulic and structural stability evaluations where appropriate. The investigators do not assume responsibility for defects or deficiencies in the dam or in the data provided.

1.2 DESCRIPTION OF PROJECT

a. Description of Dam and Appurtenances

The Round Pond Creek Dam is located in the Town of Greece, New York, just south of Straub Road and east of the Hamlet of South Greece. The dam is an earth-fill structure approximately 2,765 feet long with a maximum height of 20 feet. The structure has an irregular alignment to conform to the topography of the area. The discharge control structure for this stormwater detention facility consists of a 48 inch diameter concrete pipe with a 48 inch square sluice gate which is used to regulate the outflow from the impoundment during run-off events. This regulating structure is located near the northerly end of the facility. The emergency spillway is located at the extreme northerly end of the dam and consists of a broad crested weir 218 feet long with a concrete section forming the downstream slope of the spillway. A 13 foot wide apron with energy dissipator blocks is situated at the toe of the concrete spillway. The transition from the concrete apron to the grassed spillway channel is protected by a 2 foot thick mass of protective stone to prevent scour at the end of the apron. Concrete wingwalls at each end of the spillway protect the embankment from erosion during spillway discharge.

b. Location

The Round Pond Creek Dam is located in the Town of Greece, Monroe County, New York.

c. Size Classification

The maximum height of the dam is approximately 20 feet. The volume of the impoundment is approximately 1,100 acre feet to the top of dam. Therefore, the dam is in the intermediate size classification as defined by the Recommended Guidelines for Safety Inspection of Dams.

d. Hazard Classification

Round Pond Creek, the receiving stream from the impoundment, flows through a heavily developed residential section of the Town of Greece. Several residences are located in close proximity to the structure. Therefore, the dam is in the high hazard category as defined by the Recommended Guidelines for Safety Inspection of Dams.

e. Ownership

The dam is owned by the Town of Greece, New York.

Contact: James S. Peet, P.E.
Town Engineer
Greece Town Hall
2505 West Ridge Road
Rochester, New York 14626
Telephone: (716) 225-2000

f. Purpose of the Dam

The dam is used as a storm water retention facility to control flows in Round Pond Creek downstream from the facility.

g. Design and Construction History

The plans included in this report indicate that the dam was designed in 1976 with construction completed in 1977. The dam, as it presently exists, substantially conforms to the plans. No modifications have been made to the facility since its construction.

h. Normal Operational Procedures

The facility is operated by the Town of Greece. Flow is maintained through the outlet control structure during dry weather flow. The facility is monitored twice weekly during these periods. During runoff events, the sluice gate controlling the outlet flow is manipulated to maintain optimum flow in the receiving stream downstream from the facility. During these runoff events, the facility is monitored every 2 hours or more often if required. Adjustments to the outlet flow are made on an around-the-clock basis until the runoff event is terminated and the impoundment is drained.

1.3 PERTINENT DATA

a. Drainage Area

The drainage area of Round Pond Creek Dam is 7.02 square miles (4,493 acres).

b. Discharge at Dam Site

Maximum recorded reservoir elevation is 457.2. Associated discharge unknown.

Computed Discharges:

Emergency Spillway, top of dam	7,190 cfs
* Gated Drawdown	275 cfs

c. Elevation (feet above MSL)

Top of Dam	463.5
Spillway Crest	458.0
Stream Bed at Centerline of Dam	443.8
Invert of 48 inch Diameter Pipe	443.8

d. Reservoir

Length of Spillway Pool	3,000 ft.
Length of Normal Pool	Normally dry

e. Storage

Top of Dam	1,100 acre feet
Spillway Crest	460 acre feet

f. Reservoir Area

Top of Dam	148 acres
Spillway Crest	100 acres

g. Dam

Type - Homogeneous earth fill.
Length - 2,765
Height - 20+ feet
Freeboard Between Emergency Spillway and Top of Dam - 5.5 feet
Top Width - 12 feet
Side Slopes - 3 horizontal:1 vertical, upstream and downstream
Zoning - None
Impervious Core - None
Grout Curtain - None

* Discharge through 48 inch diameter pipe, with reservoir at spillway crest.

h. Emergency Spillway

Type - Broad crested weir
Length - 218 feet
Crest Elevation - 458
Gates - None
U/S Channel - Impoundment
D/S Channel - 1 vertical:2 horizontal, concrete, sloped to sod channel (see plans)

i. Regulating Outlets

Flow is regulated through a 48 inch concrete outlet pipe with 48 inch square sluice gate.

SECTION 2: ENGINEERING DATA

2.1 GEOTECHNICAL DATA

a. Geology

Geologically, Round Pond Creek Dam is located in the Eastern Lake section of the Central Lowland Province which is part of the Interior Plains, the major physiographic division. The dam is sited on glacial debris which overlies the Grimsby Sandstone of Lower Silurian age. The Grimsby is made up mostly of thick-bedded red siltstones. Thin-bedded argillaceous shales are also present. Bedrock is probably within 15 feet of the surface. Bedding is horizontal. The glacial debris was located at the then southern boundary of glacial Lake Iroquois. The debris appears to be mainly of a glacial lake beach which consists of silt, sand and gravel layers, and lenses with little or no fines. Silty sands are most common. A zone or layer of glacial till may be present between the bedrock below and the beach deposits above. It may on occasion appear on the surface depending on the irregularity of its thickness and may represent a covered ground moraine.

Several soil varieties are present in the vicinity of the dam and are generally considered to be poorly suited to unsuited for use of excavated impoundments. Permeability varies from moderately rapid to rapid, from 0.63 to more than 6.3 inches per hour, depending on the soil type.

b. Subsurface Investigations

Detailed subsurface investigations were conducted prior to the design of the facility. The records of these subsurface investigations are included in Appendix E.

2.2 DESIGN RECORDS

The preliminary engineering report and design computations for the construction for the design of this facility are included in Appendix E.

2.3 CONSTRUCTION RECORDS

Although the records kept during construction were not available for review, the design engineer's certification of construction indicates that the facility was constructed under his inspection and that of his soils consultant. A letter summarizing the construction of the facility is included in Appendix E.

2.4 OPERATION RECORDS

The facility is monitored twice weekly during dry weather periods. An inspection check list (See Appendix E) is filled out during each inspection trip. The check list covers security measures at the site and documents the position of the control gate. During runoff events, the facility is monitored every 2 hours or more often if required. Elevations of the water in the impoundment are recorded on a storage curve during each visit. Control gate positions are also documented. Control gates are adjusted to maintain optimum flow in the downstream channel.

2.5 EVALUATION OF DATA

The data presented in this report was obtained from the Town Engineer of the Town of Greece and from the files of the New York State Department of Environmental Conservation, Dam Safety Section. The information appears to be reliable and adequate for a Phase I Inspection Report.

SECTION 3: VISUAL INSPECTION

3.1 FINDINGS

a. General

The Round Pond Creek Dam was inspected on November 20, 1980. The Dale Engineering Company Inspection Team was accompanied on the inspection by James S. Peet, P.E., Town Engineer of the Town of Greece. At the time of the inspection, a light snow cover partially obscured the ground surface in the area. The weather was fair and sunny and temperature was in the mid 30's. At the time of the inspection, there was no water in the impoundment. The control gate at the outlet structure was open approximately 1-1/2 feet. The flow through the outlet structure was not restricted by the control gate.

b. Dam

The embankment of the facility shows no signs of subsidence, misalignment, or sloughing of the slopes. Since the facility is a storm detention basin and no water was impounded at the time of the inspection, there was no evidence in the field of seepage at the toe or on the downstream slope of the embankment. Minor erosion on the slopes of the embankment was detected and is attributed to motor bike traffic on the facility. A drainage ditch at the toe of the downstream slope which carries local drainage to the outlet channel appears to be susceptible to erosion if substantial flow were to occur in this ditch. The steep sloped sides of the ditch were unprotected near the top. However, no serious erosion was evident at this time.

c. Control Outlet

The outlet control structure was in good condition and the control gate was in operating condition and well maintained. Riprap slope protection at the outlet of the control structure has been displaced by vandals.

d. Emergency Spillway

Concrete surfaces of the emergency spillway were in good condition, typical of new construction. The emergency spillway channel downstream from the emergency spillway has a well-established sod cover.

e. Reservoir Area

The reservoir area at the spillway crest elevation extends approximately 3,000 feet upstream from the dam structure. The area in the impoundment remains in a natural state with light woods and brush prevailing throughout the area. Slopes at the edge of the impoundment at the maximum pool elevation are gently sloping and no erosion was noted in the reservoir area.

f. Downstream Channel

The channel downstream from the control outlet is formed in sand and gravel. There was no evidence in the field of recent erosion along the channel. Some displacement of protective riprap at the outlet was evident. This displacement is attributed to vandalism at the site.

3.2 EVALUATION

The visual inspection revealed that the dam is generally in good condition with only minor erosion due to motor bike traffic on the embankment. Both the control outlet and the emergency spillway are in good condition and no signs of structural instability were detected.

The following specific items should be addressed by the Owner:

1. Continual surveillance should be maintained on the drainage ditch at the toe of the downstream slope near the center of the embankment to detect any erosion which could occur from high flows in this channel.

2. Riprap slope protection at the downstream end of the control outlet should be replaced.

SECTION 4: OPERATION AND MAINTENANCE PROCEDURES

4.1 PROCEDURES

The normal operating procedure for this facility is to control the flow in the downstream channel of Round Pond Creek to prevent flooding of residential properties during rainfall runoff events. During dry weather the sluice gate at the control outlet is maintained in a position which will allow unrestricted flow through the facility. The position of the gate at the time of the inspection provided an opening of approximately 1-1/2 feet. During rainfall events, the gate in this position would begin to impede flow and thereby raise the water level in the impoundment. As runoff continues, the facility is monitored every 2 hours or more often if necessary, depending on the extent of the runoff, and the gate adjusted to maintain optimum flow in the downstream channel. Around-the-clock surveillance is maintained during runoff events.

4.2 MAINTENANCE OF THE DAM

Maintenance and operation of the dam is controlled by the Town of Greece. Periodic visits are made to the site to check on the conditions of the facilities. An inspection checklist is completed based on the findings of the monitoring visit.

4.3 MAINTENANCE OF OPERATING FACILITY

The gate controlling the outlet from the impoundment is in good condition and properly maintained.

4.4 DESCRIPTION OF WARNING SYSTEM

No warning system is in effect at present.

4.5 EVALUATION

The dam and appurtenances are regularly inspected by representatives of the Town of Greece. The facility is presently in good condition. There is no evidence of deterioration caused by lack of maintenance. Since the dam is in the high hazard classification, a warning system should be implemented to alert the public should conditions occur which could result in failure of the dam.

SECTION 5: HYDROLOGIC/HYDRAULIC

5.1 DRAINAGE AREA CHARACTERISTICS

The Round Pond Creek Dam is a flood control structure located in the southern portion of the Town of Greece, some 3,200 feet north of the Erie Canal. The dam has a drainage area of 7.02 square miles of which 5.74 square miles lies south of the canal. The drainage area is a moderately sloped basin consisting of agricultural and wooded areas, interspersed with suburban developments. The reservoir has a surface area of approximately 100 acres at the spillway crest. However, due to the operation of the structure as a flood control facility, the reservoir area is normally dry.

Flow from the portion of the drainage area south of the canal is conveyed underneath the canal through three separate conduits. Due to the limited discharge capacity of these conduits and the barrier created by the canal, flow from the southern drainage area is restricted under high flow conditions.

5.2 ANALYSIS CRITERIA

The purpose of this investigation is to evaluate the dam and spillway with respect to their flood control potential and adequacy. This has been assessed through the evaluation of the Probable Maximum Flood (PMF) for the watershed and the subsequent routing of the flood through the reservoir and the dam's spillway system. The PMF event is that hypothetical flow induced by the most critical combination of precipitation, minimum infiltration loss and concentration of run-off of a specific location that is considered reasonably possible for a particular drainage area.

The hydrologic analysis was performed using the unit hydrograph method to develop the flood hydrograph. Due to the limited scope of this Phase I investigation, certain assumptions, based on experience and existing data were used in this analysis and in the determination of the dam's spillway capacity to pass the PMF. In the event that the dam could not pass 1/2 the Probable Maximum Flood without overtopping, additional analyses are to be performed on potential dam failures if the dam is designated as a High Hazard Classification. This process was done with the concept that if the dam was unable to satisfy this criteria, further refined hydrologic investigations would be required.

The U.S. Army Corps of Engineers' Hydrologic Engineering Center's Computer Program HEC-1 DB using the Modified Puls Method of flood routing was used to evaluate the dam, spillway capacity, and downstream hazard.

Unit hydrographs were defined by Snyder coefficients, C_t and C_p. Snyder's C_t was estimated to vary from 1.25 to 1.75 for the drainage area and C_p was estimated to be 0.625. The drainage area was divided into sub-areas to model the variability in hydrologic characteristics within the drainage basin and the effect of the barrier created by

the canal. Run-off, routing and flood hydrograph combining was then performed to obtain the flow into the reservoir. In this analysis, the reservoir pool was assumed to be at the spillway crest elevation at the start of the storm and outflow through the low level outlet was assumed to be zero. Flood water overtopping the canal embankment was assumed to be controlled within the canal system and, therefore, extracted from this analysis model.

The Probable Maximum Precipitation (PMP) was 21.6 inches according to Hydrometeorological Report (HMR #33) for a 24-hour duration storm, 200 square mile basin, while loss rates were set at 1.0 inches initial abstraction and 0.1 inches/hour continuous loss rate. The loss rate function yielded 86 percent run-off from the PMF. The peak for the PMF inflow hydrograph was 4,172 cfs and the 1/2 PMF inflow peak was 2,285 cfs. The storage capacity of the reservoir above the spillway reduced these peak flows to 3,692 cfs for the PMF and 2,005 cfs for the 1/2 PMF flow.

5.3 SPILLWAY CAPACITY

The spillway is a trapezoidally shaped weir structure 218 feet in length. A weir coefficient of 2.95 was assigned for the spillway rating curve development. The discharge capacity of the spillway at the top of dam elevation is 7,190 cfs.

SPILLWAY CAPACITY

Flood	Peak Discharge	Capacity as % of Flood Discharge
PMF	3,692 cfs	195%
1/2 PMF	2,005 cfs	359%

5.4 RESERVOIR CAPACITY

The reservoir storage capacity was obtained from "Preliminary Engineering Report - Round Pond Watershed, Retention Basin Number One (Ref. 20) and USGS mapping. The resulting estimates of the reservoir storage capacity are shown below:

Top of Dam	1,100 Acre Feet
Emergency Spillway Crest	460 Acre Feet

5.5 FLOODS OF RECORD

The maximum recorded reservoir elevation was 457.2 and occurred on March 24, 1978. The discharge associated with this reservoir elevation is unknown.

5.6 OVERTOPPING POTENTIAL

The HEC-1 DB analysis indicates that the spillway can pass the PMF with 1.8 feet of freeboard and the 1/2 PMF with 2.9 feet of freeboard.

5.7 EVALUATION

The hydrologic/hydraulic analysis indicates that the spillway is capable of passing the Probable Maximum Flood (PMF) with 1.8 feet of freeboard. Therefore, the spillway is assessed as adequate according to the Corps of Engineers' screening criteria.

SECTION 6: STRUCTURAL STABILITY

6.1 EVALUATION OF STRUCTURAL STABILITY

a. Visual Observations

The Round Pond Creek Dam is a flood retention facility consisting of an earthen embankment and a concrete emergency spillway section. The emergency spillway section comprises the westerly most section of the dam and ties into the earthen abutment. The earthen embankment portion of the dam extends from the right side of the emergency spillway section some 2,550 feet in a southeasterly direction to the right abutment where it ties into natural ground. The slopes of the earthen embankment are grassed and an access road runs along the entire crest of the embankment. Concrete training walls extend just downstream of the spillway and an earthen berm extends from the training wall downstream, forming the left bank of the emergency spillway channel. A concrete apron spanning the width of the emergency spillway channel between the training walls extends from the toe of the spillway to about 12 to 15 feet downstream. Two offset rows of concrete block energy dissipators run the width of the apron.

The embankment is well maintained, adequately mowed, and void of any brush or tree growth. The slopes are generally uniform with no evidence of structural movement or cracking. The concrete emergency spillway appears to be in good condition with only minor surface cracking apparent. The inlet and outlet structure for the discharge control structure (low level outlet) were in good condition. Some of the heavy stone fill around the inlet and outlet headwalls have been displaced by vandals.

The crest and some areas of the slope of the embankment have been subjected to motor bike travel. This has led to some localized surface erosion of the slopes. A drainage ditch is located at the downstream toe of the slope along a southeasterly portion of the embankment. The bank protection along this portion of the embankment mainly consists of gravel and cobble sized stone, therefore, the embankment could be subject to erosion under substantial flow. However, no erosion of this area was evident at the time of inspection.

b. Design and Construction Data

No information regarding the slope stability of the structure was located. Drawings included in Appendix F substantially conform to the present facility. The drawings indicate the embankment was specified to be a homogeneous earth fill dam constructed of earth, compacted to 90% of modified proctor maximum density. The embankment crest was specified as 12 feet wide and the side slopes as 3:1 (horizontal to vertical), both upstream and downstream. The emergency spillway is 218 feet wide with concrete training walls extending from the spillway to the top of the dam.

Construction drawings for the project are dated April 1976 and available correspondence indicates the project was completed in 1977.

c. Operating Records

The only formal operating records pertain to pool elevations, gate openings of the low level outlet, and security measures.

d. Post Construction Changes

There is no field evidence or available information indicating post construction changes to the facility.

e. Seismic Stability

No known faults or lineaments suggesting faults are present in the immediate area. The area is located within Zone 2 of the Seismic Probability Map but is only 22 miles northeast of an active Zone 3 which has had earthquakes with intensities as great as VIII on the Modified Mercalli Scale. Only a few earthquakes have been recorded in the vicinity of the reservoir and are tabulated below:

Date	Intensity Modified Mercalli	Location Relative to Dam
1931	I	7 miles ENE
1931	II	7 miles ENE
1944	II	6 miles SE
1977	IV	18 miles SE

6.2 STRUCTURAL STABILITY ANALYSIS

The earthen embankment appeared to be generally uniform in section with no signs of structure instability in evidence. Some of the heavy stone fill around the low level outlet headwall has been displaced, leaving this area susceptible to erosion. Therefore, this erosion protection feature should be repaired.

The entire embankment, as well as areas beyond the toe of the slope, should be regularly inspected as a part of a formalized inspection program to detect deficiencies. Any deficiencies and the remedial measures undertaken to correct these deficiencies should be well documented to provide historical background on which future evaluations may be based.

SECTION 7: ASSESSMENT/REMEDIAL MEASURES

7.1 DAM ASSESSMENT

a. Safety

The Phase I Inspection of the Round Pond Creek Dam did not indicate conditions which would constitute an immediate hazard to human life or property.

The hydrologic/hydraulic analysis indicates that the spillway will pass 195% of the Probable Maximum Flood (PMF). Therefore, the spillway is assessed as adequate.

The visual inspection did not reveal conditions which would indicate evidence of structural displacement or instability.

The following specific safety assessments are based on the Phase I visual examination and analysis of hydrology and hydraulics, and structural stability:

1. Minor surface erosion due to motor bike traffic was detected on the crest and on the slopes of the embankment.

2. The slopes of a drainage ditch at the toe of the downstream embankment near the center of the dam is susceptible to erosion during high flows in the channel because of the lack of slope protection.

3. Bank protection at the downstream end of the control outlet has been displaced by vandals.

4. No warning system is presently in effect to alert the public should conditions occur which could result in failure of the dam.

5. Although the facility is inspected regularly, the inspection program does not include a formalized inspection of the entire embankment and areas beyond the toe of slope.

b. Adequacy of Information

The information available is adequate for this Phase I investigation.

c. Urgency

Items 1 through 5 of the safety assessment should be addressed by the Owner and appropriate actions taken within one year of this notification.

d. Need for Additional Investigation

This Phase I inspection has not revealed the need for additional investigations regarding this structure.

7.2 RECOMMENDED MEASURES

The following is a list of recommended measures to be undertaken to insure safety of the facility:

1. Motor bike traffic should be restricted on the facility. The erosion due to this traffic should be repaired.

2. Provide bank protection for the drainage ditch at the toe of the downstream slope near the center of the dam.

3. Rank protection at the control outlet should be repaired. Steps should be taken to control vandalism at the site.

4. A flood warning and emergency evacuation system should be implemented to alert the public should conditions occur which could result in failure of the dam.

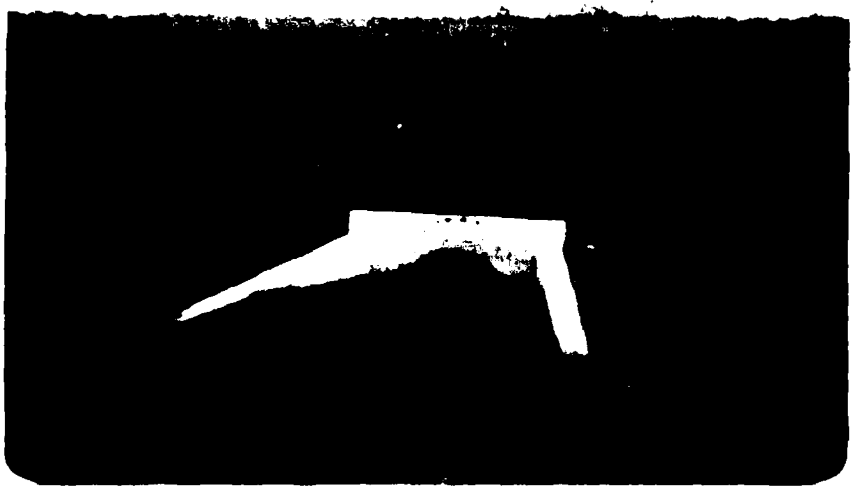
5. A formalized inspection system should be initiated to develop data on conditions and maintenance operations at the facility, including the slopes and the area immediately downstream from the toe of the embankment. Deficiencies and the remedial measures undertaken to correct these deficiencies should be well documented to provide historical background on which future evaluations may be made.

APPENDIX A

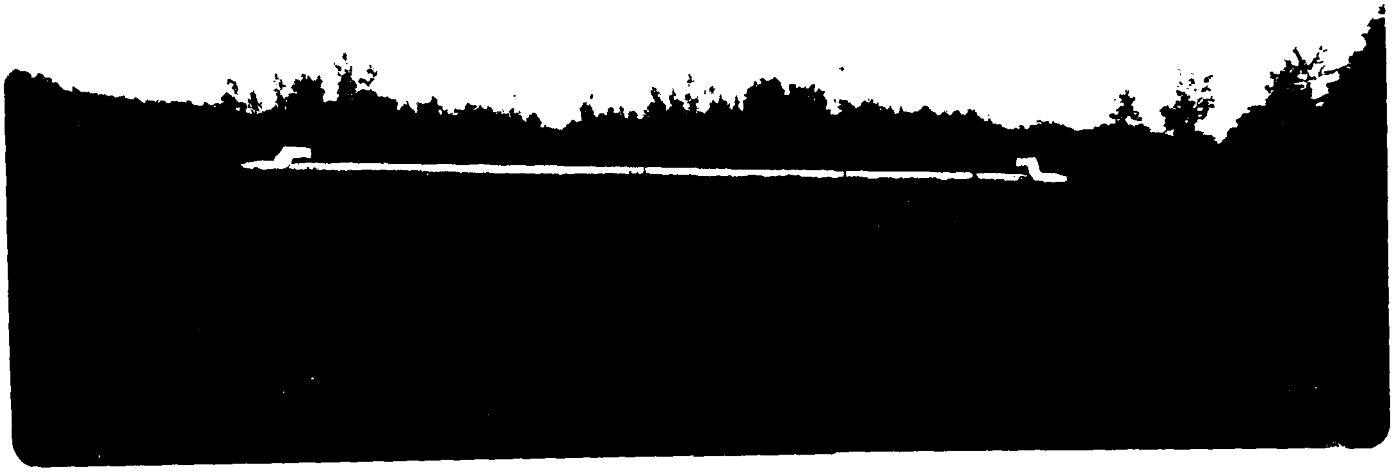
PHOTOGRAPHS

2. Inlet stream to control outlet. Note staff gage to left of stream.

3. Trash rack at inlet to control outlet.



4. Outlet of the control outlet. Note displacement of riprap around top of headwall.



5. Emergency spillway as viewed from downstream.

6. Closeup of emergency spillway.

7. Channel downstream of emergency spillway.

8. View along embankment crest.

9. External drainage ditch. Note steep slopes susceptible to erosion.

10. Closeup of external drainage ditch. Note cobble stone bank protection.

APPENDIX B

VISUAL INSPECTION CHECKLIST

93-15-3(9/80)

VISUAL INSPECTION CHECKLIST

1) Basic Data

a. General

Name of Dam ROUND POND CREEK DAM

Fed. I.D. # NY - 710 DEC Dam No. ______

River Basin LAKE ONTARIO

Location: Town GREECE County MONROE

Stream Name ROUND POND CREEK

Tributary of ROUND POND

Latitude (N) 44 - 11.6 Longitude (W) 77 - 42.7

Type of Dam EARTH

Hazard Category HIGH

Date(s) of Inspection NOV. 20, 1980

Weather Conditions FAIR (LIGHT SNOW COVER)

Reservoir Level at Time of Inspection NO WATER IMPOUNDED AT TIME OF INSPECTION

b. Inspection Personnel F. W. BYSZEWSKI, B. COLWELL, J.A. GOMEZ
H. MUSKATT - DALE ENGINEERING COMPANY JAMES PEET TOWN ENGINEER TOWN OF GREECE

c. Persons Contacted (Including Address & Phone No.)

JAMES PEET PE TOWN ENGINEER
GREECE TOWN HALL TELEPHONE 716-225-2000
2505 W. RIDGE RD.
ROCHESTER, N.Y 14626

d. History:

Date Constructed 1977 Date(s) Reconstructed ——

Designer WILLIAM C. LARSEN P.E

Constructed By ______

Owner TOWN OF GREECE

2) Embankment

a. Characteristics

(1) Embankment Material HOMOGENEOUS EARTH, SILTY SANDS

(2) Cutoff Type NONE

(3) Impervious Core NONE

(4) Internal Drainage System NONE

(5) Miscellaneous ———

b. Crest

(1) Vertical Alignment NO MISALIGNMENT OBSERVED

(2) Horizontal Ali ent NO MISALIGNMENT OBSERVED

(3) Surface Cracks NONE OBSERVED (LIGHT SNOW COVER AT TIME OF INSPECTION

(4) Miscellaneous N/A

c. Upstream Slope

(1) Slope (Estimate) (V:H) 1 : 3

(2) Undesirable Growth or Debris, Animal Burrows NONE OBSERVED

(3) Sloughing, Subsidence or Depressions NONE OBSERVED

(4) Slope Protection WELL ESTABLISHED SOD
IMPOUNDMENT IS NORMALLY DRY

(5) Surface Cracks or Movement at Toe NONE OBSERVED

d. Downstream Slope

(1) Slope (Estimate - V:H) 1 : 3

(2) Undesirable Growth or Debris, Animal Burrows NONE OBSERVED

(3) Sloughing, Subsidence or Depressions NONE OBSERVED

(4) Surface Cracks or Movement at Toe NONE OBSERVED
(LIGHT SNOW COVER AT TIME OF INSPECTION)

(5) Seepage NONE OBSERVED NO WATER WAS
IMPOUNDED AT TIME OF INSPECTION.

(6) External Drainage System (Ditches, Trenches; Blanket) DITCH AT
TOE OF SLOPE SHOWS MINOR EROSION NEAR CURVE
IN DAM ALIGNMENT.

(7) Condition Around Outlet Structure DISPLACEMENT OF RIP
RAP PROTECTION BY VANDALS

(8) Seepage Beyond Toe NONE OBSERVED - NO WATER
IMPOUNDED AT TIME OF INSPECTION

e. Abutments - Embankment Contact

GOOD CONDITION NO PROBLEMS OBSERVED

93-15-3(9/80)

(1) Erosion at Contact NONE OBSERVED

(2) Seepage Along Contact NONE OBSERVED - NO WATER IMPOUNDED AT TIME OF INSPECTION

3) Drainage System

a. Description of System NONE

b. Condition of System N/A

c. Discharge from Drainage System N/A

4) Instrumentation (Momumentation/Surveys, Observation Wells, Weirs, Piezometers, Etc.) NONE

93-15-3(9/80)

5) Reservoir

a. Slopes FLAT SLOPES AT THE IMPOUNDMENT LIMITS. NO WATER IMPOUNDED AT TIME OF INSPECTION

b. Sedimentation NONE OBSERVED

c. Unusual Conditions Which Affect Dam NONE OBSERVED

6) Area Downstream of Dam

a. Downstream Hazard (No. of Homes, Highways, etc.) FACILITY IS SITUATED IMMEDIATELY UPSTREAM OF A HEAVILY DEVELOPED RESIDENTIAL SUBDIVISION

b. Seepage, Unusual Growth NONE OBSERVED

c. Evidence of Movement Beyond Toe of Dam NONE OBSERVED

d. Condition of Downstream Channel NO RECENT EROSION OBSERVED. CHANNEL IS RESTRICTED BY ROADWAY CULVERTS FURTHER DOWNSTREAM FROM THE FACILITY

7) Spillway(s) (Including Discharge Conveyance Channel)

SERVICE SPILLWAY FOR DRY WEATHER FLOW IN GOOD CONDITION RECENTLY CONSTRUCTED (1977). NO PROBLEMS OBSERVED.

a. General SERVICE SPILLWAY CONSISTS OF 48" CONCRETE PIPE WITH 48x48 SLUICE GATE TO CONTROL OUTLET FLOW.

b. Condition of Service Spillway EXCELLENT - RECENTLY CONSTRUCTED (1977)

93-15-3(9/80)

c. Condition of Auxiliary Spillway EXCELLENT. NO FLOW HAS OCCURED THROUGH THE AUXILIARY SPILLWAY SINCE IT'S CONSTRUCTION

d. Condition of Discharge Conveyance Channel GOOD CONDITION - NEVER USED NO OBSTRUCTIONS.

8) Reservoir Drain/Outlet

Type: Pipe ✓ Conduit ____ Other ____

Material: Concrete 48" Metal ____ Other ____

Size: 48" Length 37+55 = 92 ft.

Invert Elevations: Entrance 443.98 Exit 443.50

Physical Condition (Describe): Unobservable ____

Material: NO SPALLING OR OTHER DEFECTS NOTED.

Joints: GOOD Alignment NO MISALIGNMENT.

Structural Integrity: NO EVIDENCE OF STRUCTURAL INSTABILITY NOTED.

Hydraulic Capability: 48" INLET CONTROL SEE HYDROLOGY : HYDRAULICS.

Means of Control: Gate 48" x 48" Valve ____ Uncontrolled ____

Operation: Operable ✓ Inoperable ____ Other ____

Present Condition (Describe): EXCELLENT - WELL MAINTAINED IN GOOD OPERATING CONDITION.

93-15-3(9/80)

9) Structural

a. Concrete Surfaces NO PROBLEMS NOTED - NO SPALLING OR OTHER DEFECTS (OUTLET STRUCTURE : AUXILIARY SPILLWAY)

b. Structural Cracking NONE OBSERVED

c. Movement - Horizontal & Vertical Alignment (Settlement) NONE OBSERVED.

d. Junctions with Abutments or Embankments GOOD CONDITION - NO PROBLEMS NOTED (AUXILIARY SPILLWAY)

e. Drains - Foundation, Joint, Face NONE.

f. Water Passages, Conduits, Sluices N/A

g. Seepage or Leakage N/A

h. Joints - Construction, etc. N/A

i. Foundation N/A

j. Abutments N/A

k. Control Gates N/A

l. Approach & Outlet Channels SEE PHOTOS NO PROBLEMS.

m. Energy Dissipators (Plunge Pool, etc.) GOOD CONDITION

n. Intake Structures TRASH RACK CLEAR - NO PROBLEMS.

o. Stability ———

p. Miscellaneous ———

10) Appurtenant Structures (Power House, Lock, Gatehouse, Other)

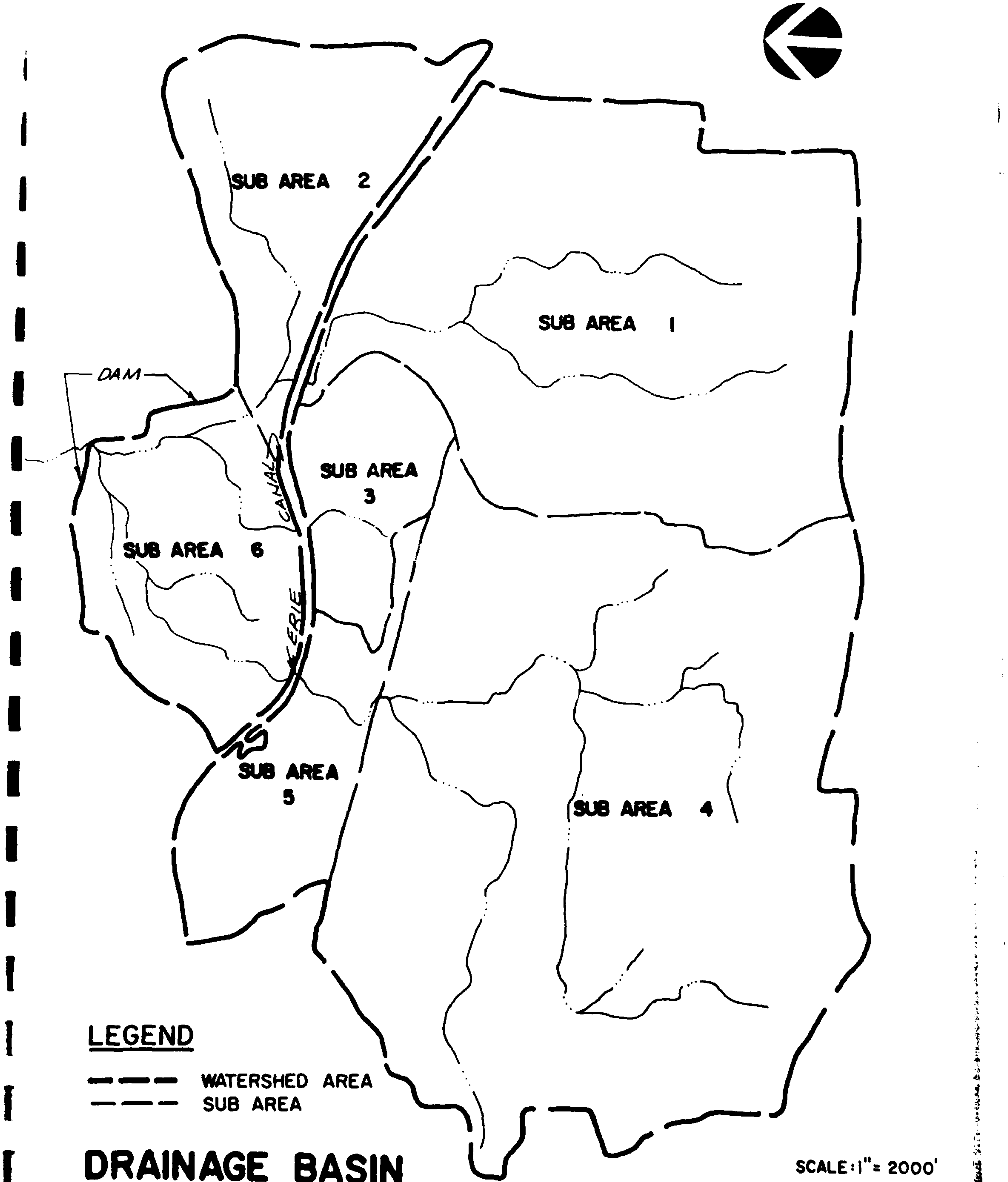
a. Description and Condition NONE

11) Operation Procedures (Lake Level Regulation):

THE FACILITY IS MONITORED TWICE WEEKLY DURING DRY WEATHER. DURING RAINFALL EVENTS THE FACILITY IS MONITORED EVERY TWO HOURS OR MORE OFTEN IF REQUIRED. OUTLET GATES ARE ADJUSTED TO MAINTAIN OPTIMUM FLOW IN DOWNSTREAM CHANNEL.

APPENDIX C

HYDROLOGIC/HYDRAULIC, ENGINEERING DATA AND COMPUTATIONS



DRAINAGE BASIN

SCALE: 1" = 2000'

STETSON • DALE BANKERS TRUST BUILDING UTICA • NEW YORK • 13501 TEL 315•797•5800

DESIGN BRIEF

PROJECT NAME N.Y.S. Dam Inspections - 1981 DATE 1-26-81

SUBJECT Round Pond Creek PROJECT NO. 2520

Subarea Hydrologic Parameters DRAWN BY

Subarea	Area	C_t	L	L_{CA}	$t_1 = C_t (L \times L_{CA})^{0.3}$
1	1.931 mi²	1.75	2.25 mi	1.35 mi	2.45 hr.
2	0.659	1.75	1.4	0.85	1.85
3	0.321	1.5	0.55	0.2	1.55
4	3.042	1.75	2.7	1.15	2.45
5	0.445	1.75	0.85	0.35	1.20
6	0.621	1.25	1.1	0.7	1.15
	Σ = 7.019 mi²				

STETSON • DALE BANKERS TRUST BUILDING UTICA • NEW YORK • 13501 TEL 315-797-5800 DESIGN BRIEF

PROJECT NAME N.Y.S. Dam Inspections 1981 DATE 12-19-80

SUBJECT Round Pond Creek ID# 710 PROJECT NO. 2520

Depth-Area-Duration DRAWN BY JAG

PMP from HMR #33
for Lat. ~ 43°12' Long. ~ 77°43'
Index Rainfall = 21.6" for 200 mi², 24 hr
Zone 2

Duration	% Index*	Depth
6 hrs.	117	25.3"
12 hrs.	127	27.4
24 hrs	141	30.5
48 hrs	151	32.6

* Adjusted for site area, Drainage Area = 7.02 mi² (which is less than the lower limit of the areal adjustment graph, 10 mi², therefore these values were adjusted for this lower limit).

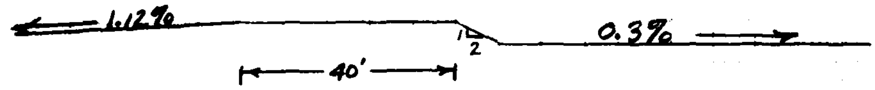
STETSON • DALE BANKERS TRUST BUILDING UTICA • NEW YORK • 13501 TEL 315-797-5800 **DESIGN BRIEF**

PROJECT NAME N.Y.S. Dam Inspections 1981 DATE 1-21-81

SUBJECT Round Pond Creek Dam PROJECT NO. 2520

Spillway Rating DRAWN BY JAG

Flow →



Cross Section Through Emergency Spillway

Trapezoidal Spillway
Crest @ Elevation 458
Length = 218'
$Q = C L H^{3/2}$
For a trapezoidal spillway with vertical sideslopes
$C \sim 2.95$

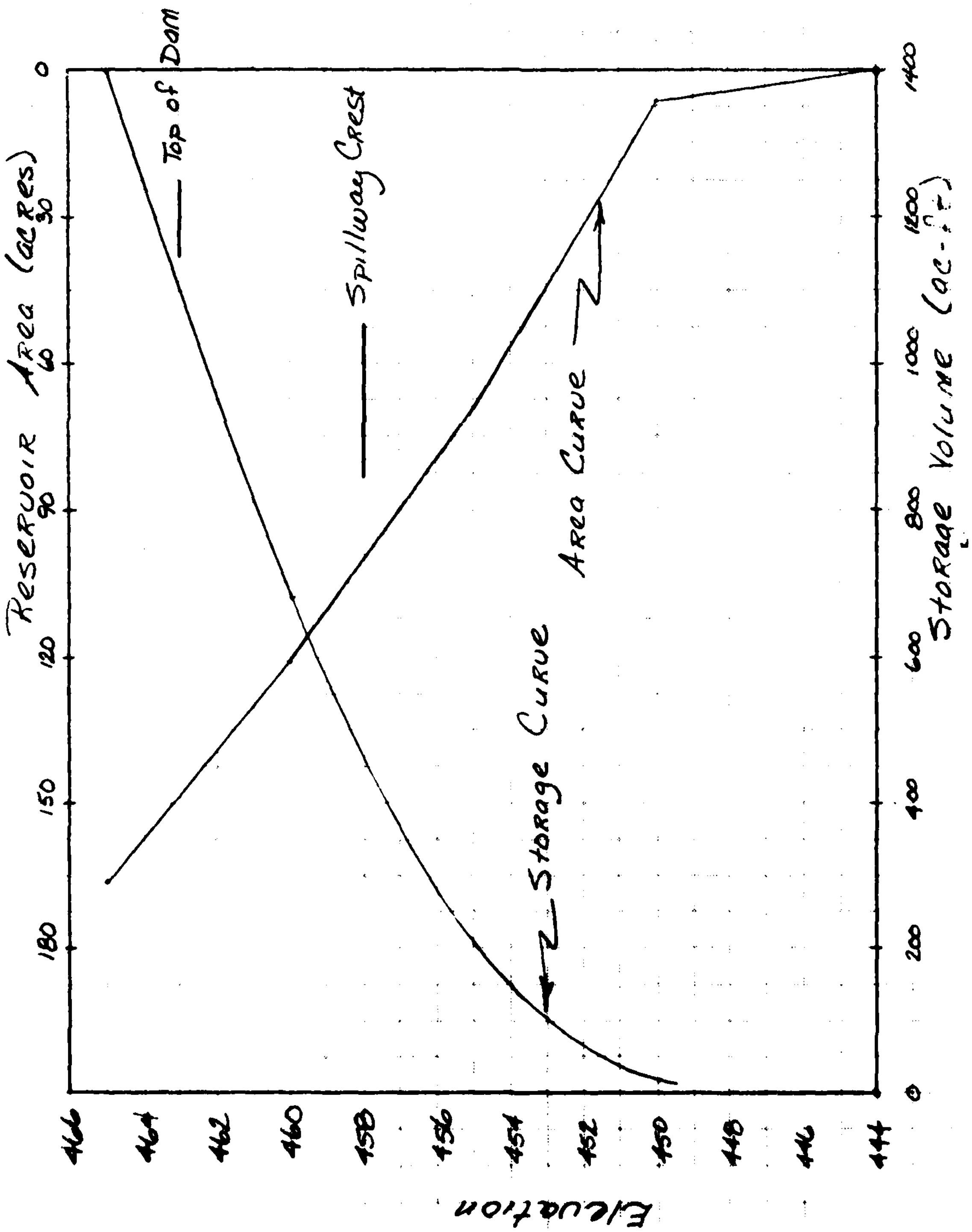
Elev.	H	Q
458	0	0
458.5	0.5'	227 cfs
459	1	643
459.5	1.5	1181
460	2	1819
460.5	2.5	2542
461	3	3342
461.5	3.5	4211
462	4	5145
462.5	4.5	6139
463	5	7190

STETSON • DALE BANKERS TRUST BUILDING UTICA • NEW YORK • 13501 TEL 315-797-5800 **DESIGN BRIEF**

PROJECT NAME N.Y.S. Dam Inspections DATE 1-28-81

SUBJECT Round Pond [illegible] PROJECT NO. 2520

Area Capacity Curve DRAWN BY



STETSON • DALE BANKERS TRUST BUILDING UTICA • NEW YORK • 13501 TEL 315-797-5800 **DESIGN BRIEF**

PROJECT NAME N.Y.S. Dam Inspections -1981 DATE

SUBJECT Round Pond Creek PROJECT NO. 2520

Rating Curves for Upland Control Structures DRAWN BY

Structure Dimensions from:
Structure Condition Report, Barge Canal - Western Section
Materials Bureau, N.Y.S. D.O.T.
February 1977

#43 (Subarea 1 outlet) 4'x3'3" Concrete Arch 424' long

#44 (Subarea 3 outlet) 36' of 36"Ø CMP, 72.5' of 4'w x 3' high Concrete Arch, 132' of 42"Ø CIP

#45 (Subarea 5 outlet) 132' of 48"Ø CIP, 74' of 4'x4' Concrete Arch

Headwater Elevation	Q_{43}	Q_{44}	Q_{45}
495.7			0
496.7		0	
498		16 cfs	37 cfs
500	0	36	52
502	25 cfs	54	77
504	67	67	98
506	102	79	112
508	120	88	127
510	132	97	140
512	143	105	152
514	155	114	164
516	164	122	174
517	168	126	180

STETSON • DALE BANKERS TRUST BUILDING UTICA • NEW YORK • 13501 TEL 315•797•5800 DESIGN BRIEF

PROJECT NAME N.Y.S. Dam Inspections 1981 DATE 1-26-81
SUBJECT Round Pond Creek PROJECT NO. 2520
DRAWN BY

Rating Curve for 5' x 6'6" Stone Arch Stream Conduit under R.R. Embankment (Subarea 4 outlet)

Arch Invert @ 512.4
Top of R.R. Embankment ~530

H	Q
2'	35 cfs
4	105
6	185
8	285
10	350
12	400
14	450
16	505
18	545

STETSON • DALE BANKERS TRUST BUILDING UTICA • NEW YORK • 13501 TEL 315-797-5800 **DESIGN BRIEF**

PROJECT NAME N.Y.S. Dam Inspections 1981 DATE

SUBJECT Round Form Creek PROJECT NO. 2520

Reservoir Drawdown Capacity DRAWN BY

48" RCP @ invert elev ~443.8
Length ~55'
for $H \geq 1.5D$ will act as an orifice

$$Q = CA\sqrt{2gH}$$

C from Table 4-11 "Handbook of Hydraulics"
King & Brater

C = 0.725

$A = \pi R^2 = 12.57 \text{ ft}^2$

Elev	H	Q (cfs)	
458	14.2	275	(Spillway Crest)
463	19.2	320	(Top of Dam)

Kouna

NY #170

CHECK LIST FOR DAMS
HYDROLOGIC AND HYDRAULIC
ENGINEERING DATA

AREA-CAPACITY DATA:

	Elevation (ft.)	Surface Area (acres)	Storage Capacity (acre-ft.)
1) Top of Dam	463.5	148	1100
2) Design High Water (Max. Design Pool)	461	130	810
3) Auxiliary Spillway Crest	443.8	0	0
4) Pool Level with Flashboards	N/A		
5) Service Spillway Crest	458	100	460

DISCHARGES

	Volume (cfs)
1) Average Daily	Unknown
2) Spillway @ Maximum High Water	7190
3) Spillway @ Design High Water	3340
4) Spillway @ Auxiliary Spillway Crest Elevation	N/A
5) Low Level Outlet (48"Φ RCP with reservoir @ Top of Dam)	320
6) Total (of all facilities) @ Maximum High Water	7510
7) Maximum Known Flood	Res. @ Elev. 457.2 Discharge Unknown
8) At Time of Inspection	Unknown

CREST: **ELEVATION:** 463.5

Type: Earth fill

Width: 12' Length: 2765

Spillover Location: None (spillway @ left abutment)

SPILLWAY:

PRINCIPAL		EMERGENCY
443.8	Elevation	458
48"Ø RCP	Type	Trapezoidal
	Bottom Width	218'
	Type of Control	
	Uncontrolled	✓
	Controlled:	
gate	Type (Flashboards; gate)	
1	Number	
48" Square	Size/Length	
	Invert Material	
	Anticipated Length of operating service	
	Chute Length	
	Height Between Spillway Crest & Approach Channel Invert (Weir Flow)	

HYDROMETEROLOGICAL GAGES:

Type : Staff gage

Location: Just upstream of 48" Ø pipe inlet

Records: Available at Town of Greece, Engineer's office

Date -

Max. Reading - Unavailable

FLOOD WATER CONTROL SYSTEM:

Warning System: No formalized system

Method of Controlled Releases (mechanisms):

By Regulating gate opening of 48" Ø RCP

DRAINAGE AREA: 7 mi^2

DRAINAGE BASIN RUNOFF CHARACTERISTICS:

Land Use - Type: agricultural & wooded interspersed w/ suburban development

Terrain - Relief: moderate slope

Surface - Soil: Loam

Runoff Potential (existing or planned extensive alterations to existing (surface or subsurface conditions)

Area immediately surrounding Reservoir is planned to remain undeveloped. Upper portion of basin may be subject to future suburban developments

Potential Sedimentation problem areas (natural or man-made; present or future)

None Known

Potential Backwater problem areas for levels at maximum storage capacity including surcharge storage:

None

Dikes - Floodwalls (overflow & non-overflow) - Low reaches along the Reservoir perimeter:

Location: No low reaches Known

Elevation:

Reservoir:

Length @ Maximum Pool 0.6 ± (Miles)

Length of Shoreline (@ Spillway Crest) 2.5 ± (Miles)

```
(0001)  A1      ROUND POND CREEK DAM      FILE IS ABPV
(0002)  A2      HEC-1DB (SNYDER PAREMETERS)
(0003)  A3      PMF - DAM OVER TOPPING ANALYSIS
(0004)  B      90       1       0       0       0       0       0       0       4       0
(0005)  B1      5       0       0       0       0       0       0       0       0       0
(0006)  J       1       7       1       0       0       0       0       0       0       0
(0007)  J1    0.2     0.3     0.4     0.5     0.6     0.8     1.0       0       0       0
(0008)  K       0     100       0       0       0       0       1       0       0       0
(0009)  K1      RUNOFF SUBAREA 1
(0010)  M       1       1   1.931       0   7.019       0       0       0       1       0
(0011)  P       0    21.6     117     127     141     151       0       0       0       0
(0012)  T       0       0       0       0       0       0     1.0     0.1       0     .08
(0013)  W    2.45   0.625       0       0       0       0       0       0       0       0
(0014)  X    -2.0   -0.10     1.6       0       0       0       0       0       0       0
(0015)  K       1     101       0       0       0       0       1       0       0       0
(0016)  K1      ROUTE UNDER BARGE CANAL THRU STRUCTURE # 43
(0017)  Y       0       0       0       1       1       0       0       0       0       0
(0018)  Y1      1       0       0       0       0       0      -1       0       0       0
(0019)  Y2      0       3       8      13      17      22    2000       0       0       0
(0020)  Y3      0      67     120     143     155     164     168
(0021)  Y4    500     502     504     506     508     510     512     514     516     517
(0022)  Y5      0      25      67     102     120     132     143     155     164     168
(0023)  K       0     200       0       0       0       0       1       0       0       0
(0024)  K1      RUNOFF SUBAREA 2
(0025)  M       1       1   0.659       0   7.019       0       0       0       1       0
(0026)  P       0    21.6     117     127     141     151       0       0       0       0
(0027)  T       0       0       0       0       0       0     1.0     0.1       0    0.04
(0028)  W    1.85   0.625       0       0       0       0       0       0       0       0
(0029)  X    -2.0   -0.10     1.6       0       0       0       0       0       0       0
(0030)  K       2     200       0       0       0       0       1       0       0       0
(0031)  K1      COMBINE 2 HYDROGRAPHS 1 & 2
(0032)  K       1     601       0       0       0       0       1       0       0       0
(0033)  K1      ROUTE TO RESERVOIR
(0034)  Y       0       0       0       1       1       0       0       0       0       0
(0035)  Y1      1       0       0       0       0       0      -1       0       0       0
(0036)  Y6    .04     .04     .04     461     480     800   0.035       0       0       0
(0037)  Y7      0     460      10     479      15     470      20     461      50     461
(0038)  Y7     55     470      60     479      70     480       0       0       0       0
```

(0039)	K	0	300	0	0	0	0	1	0	0	0
(0040)	K1	RUNOFF SUBAREA 3									
(0041)	M	1	1	3.321	0	7.019	0	0	0	1	0
(0042)	P	0	21.6	117	127	141	151	0	0	0	0
(0043)	T	0	0	0	0	0	0	1.0	0.1	0	0.03
(0044)	W	1.55	0.625	0	0	0	0	0	0	0	0
(0045)	X	-2.0	-0.10	1.6	0	0	0	0	0	0	0
(0046)	K	1	301	0	0	0	0	1	0	0	0
(0047)	K1	ROUTE UNDER CANAL THRU STRUCTURE # 44									
(0048)	Y	0	0	0	1	1	0	0	0	0	0
(0049)	Y1	1	0	0	0	0	0	-1	0	0	0
(0050)	Y2	0	3.5	7	20	46	92	170	305	0	0
(0051)	Y3	36	54	67	79	88	97	105	114		
(0052)	Y4	496.7	498	500	502	504	506	508	510	512	514
(0053)	Y5	0	16	36	54	67	79	88	97	105	114
(0054)	K	1	601	0	0	0	0	1	0	0	0
(0055)	K1	ROUTE TO RESERVOIR									
(0056)	Y	0	0	0	1	1	0	0	0	0	0
(0057)	Y1	1	0	0	0	0	0	-1	0	0	0
(0058)	Y6	.07	.04	.07	461	480	1900	0.021	0	0	0
(0059)	Y7	100	420	190	475	350	464	359	461	371	461
(0060)	Y7	380	464	470	475	790	480	0	0	0	0
(0061)	K	0	400	0	0	0	0	1	0	0	0
(0062)	K1	RUNOFF SUBAREA 4									
(0063)	M	1	1	3.042	0	7.019	0	0	0	1	0
(0064)	P	0	21.6	117	127	141	151	0	0	0	0
(0065)	T	0	0	0	0	0	0	1.0	0.1	0	0.03
(0066)	W	2.45	0.625	0	0	0	0	0	0	0	0
(0067)	X	-2.0	-0.10	1.6	0	0	0	0	0	0	0
(0068)	K	1	401	0	0	0	0	1	0	0	0
(0069)	K1	ROUTE UNDER RAILROAD									
(0070)	Y	0	0	0	1	1	0	0	0	0	0
(0071)	Y1	1	0	0	0	0	0	-1			
(0072)	Y2	0	6	14	30	56	100	170	270	400	545
(0073)	Y2	600	660								
(0074)	Y3	0	35	105	185	285	350	400	450	505	535
(0075)	Y3	9800	26800								
(0076)	Y4	512.4	514.4	516.4	518.4	520.4	522.4	524.4	526.4	528.4	530.0

```
(0077)  Y4    531     532
(0078)  Y5      0      35     135     185     265     350     400     450     505     535
(0079)  Y5   9800   26800
(0080)  K       1     500       0       0       0       0       1       0       0       0
(0081)  K1         ROUTE TO BARGE CANAL
(0082)  Y       0       0       0       1       1       0       0       0       0       0
(0083)  Y1      1       0       0       0       0       0       1       0       0       0
(0084)  Y6    .07     .04     .07     500     515    1600  0.0075       0       0       0
(0085)  Y7    100     510     330     505     386     503     394     500     406     500
(0086)  Y7    415     503     540     505     730     510       0       0       0       0
(0087)  K       0     500       0       0       0       0       1       0       0       0
(0088)  K1         RUNOFF SUBAREA 5
(0089)  M       1       1   0.445       0   7.019       0       0       0       1       0
(0090)  P       0    21.6     117     127     141     151       0       0       0       0
(0091)  T       0       0       0       0       0       0     1.0     0.1       0    0.02
(0092)  W    1.20   0.625       0       0       0       0       0       0       0       0
(0093)  X    -2.0   -0.10     1.6       0       0       0       0       0       0       0
(0094)  K       2     500       0       0       0       0       1       0       0       0
(0095)  K1         COMBINE 2 HYDROGRAPHS 4 & 5
(0096)  K       1     501       0       0       0       0       1       0       0       0
(0097)  K1         ROUTE UNDER BARGE CANAL THRU STRUCTURE # 45
(0098)  Y       0       0       0       1       1       0       0       0       0       0
(0099)  Y1      1       0       0       0       0       0      -1       0       0       0
(0100)  Y2      0     0.4       3      10      25      55      97     163     250    4000
(0101)  Y3     52      77      96     112     127     140     152     164     174     180
(0102)  Y4  495.7     496     500     502     504     506     508     510     512     514
(0103)  Y4    516     517
(0104)  Y5      0      37      52      77      98     112     127     140     152     164
(0105)  Y5    174     180
(0106)  K       1     601       0       0       0       0       1       0       0       0
(0107)  K1         ROUTE TO RESERVOIR
(0108)  Y       0       0       0       1       1       0       0       0       0       0
(0109)  Y1      1       0       0       0       0       0      -1       0       0       0
(0110)  Y6    .07     .04     .07     461     480    2200   0.015       0       0       0
(0111)  Y7    100     480     320     470     450     465     460     461     475     461
(0112)  Y7    485     465     530     470     780     480       0       0       0       0
(0113)  K       0     600       0       0       0       0       1       0       0       0
(0114)  K1         RUNOFF SUBAREA 6
```

```
(0115)  M       1      1   0.621      0   7.019      0      0      0      1      0
(0116)  F       0   21.6     117    127     141    131      0      0      0      0
(0117)  T       0      0       0      0       0      0    1.0    0.1      0   0.31
(0118)  W    1.15  0.625       0      0       0      0      0      0      0      0
(0119)  X    -2.0  -0.10     1.6      0       0      0      0      0      0      0
(0120)  K       4    600       0      0       0      0      1      0      0      0
(0121)  K1       COMBINE 4 HYDROGRAPHS   TOTAL RESERVOIR INFLOW
(0122)  K       1    600       0      0       0      0      1      0      0      0
(0123)  K1       ROUTE THRU RESERVOIR AND OVER SPILLWAY
(0124)  Y       0      0       0      1       1      0      0      0      0      0
(0125)  Y1      1      0       0      0       0      0   -458      0      0      0
(0126)  SS      0    460     810   1100       0      0      0      0      0      0
(0127)  SE    444    458     461    463       0      0      0      0      0      0
(0128)  $$    458    216    2.95    1.5       0      0      0      0      0      0
(0129)  SD    463   2.65     1.5   2550       0      0      0      0      0      0
(0130)  K       1  600.1       0      0       0      0      1
(0131)  K1      ROUTE BELOW SPILLWAY
(0132)  Y       0      0       0      1       1
(0133)  Y1      1      0       0      0       0      0     -1
(0134)  Y6    .04   .035     .04  453.7     459    165   .003
(0135)  Y7    100    457     150    457     190    457    200  453.7    420  453.7
(0136)  Y7    430    457     480    458     550    459
(0137)  K      99      0       0      0       0      0      0      0      0      0
(0138)  A
(0139)  A
(0140)  A
(0141)  A
(0142)  A
```

```
PREVIEW OF SEQUENCE OF STREAM NETWORK CALCULATIONS
          RUNOFF HYDROGRAPH AT            100
          ROUTE HYDROGRAPH TO             101
          RUNOFF HYDROGRAPH AT            200
          COMBINE  2 HYDROGRAPHS AT       200
          ROUTE HYDROGRAPH TO             601
          RUNOFF HYDROGRAPH AT            300
          ROUTE HYDROGRAPH TO             301
          ROUTE HYDROGRAPH TO             601
          RUNOFF HYDROGRAPH AT            400
          ROUTE HYDROGRAPH TO             401
          ROUTE HYDROGRAPH TO             500
          RUNOFF HYDROGRAPH AT            500
          COMBINE  2 HYDROGRAPHS AT       500
          ROUTE HYDROGRAPH TO             501
          ROUTE HYDROGRAPH TO             601
          RUNOFF HYDROGRAPH AT            600
          COMBINE  4 HYDROGRAPHS AT       600
          ROUTE HYDROGRAPH TO             600
          ROUTE HYDROGRAPH TO           600.1
          END OF NETWORK
```

```
**********************************
FLOOD HYDROGRAPH PACKAGE (HEC-1)
DAM SAFETY VERSION      JULY 1978
  LAST MODIFICATION  26 FEB 79
**********************************

RUN  DATE?THU, FEB 1_ 19:1
     TIME?15:42:59

                    ROUND POND CREEK DAM      FILE IS ABPV
                    HEC-10B (SNYDER PAREMETERS)
                    PMF - DAM OVER TOFFING ANALYSIS

                                   JOB SPECIFICATION
             NQ      NHR     NMIN     IDAY      IHR     IMIN    METRC     IFLT     IFRT    NSTAN
             9        1        0        0        0        0        0        0        4        0
                                     JOPER      NWT    LROPT    TRACE
                                        5        0        0        0

                              MULTI-PLAN ANALYSES TO BE PERFORMED
                                 NPLAN= 1 NRTIO= 7 LRTIO= 1
             RTIOS=   .20    0.30    0.40    0.50    0.60    0.80    1.00


          **********         **********         **********         **********         **********

                                   SUB-AREA RUNOFF COMPUTATION

               RUNOFF SUBAREA 1
                      ISTAQ    ICOMP    IECON    ITAPE     JPLT     JPRT    INAME   ISTAGE    IALTO
                        1 0        0        0        0        0        0        1        0        0

                                       HYDROGRAPH DATA
             IHYDG     IUHG    TAREA     SNAP    TRSDA    TRSPC    RATIO    ISNOW    ISAME    LOCAL
                 1        1     1.93     0.00     7.02     0.00    0.000        0        1        0

                                         PRECIP DATA
                    SPFE      PMS       R6      R12      R24      R48      R72      R96
                    0.00    21.60   117.00   127.00   141.00   151.00     0.00     0.00
TRSPC COMPUTED BY THE PROGRAM IS 0.600

                                          LOSS DATA
          LROPT    STRKR    DLTKR    RTIOL    ERAIN    STRKS    RTIOK    STRTL    CNSTL    ALSMX    RTIMP
                    0.00     0.00     1.00     0.00     0.00     1.00     1.00     0.10     0.00     0.08

                                      UNIT HYDROGRAPH DATA
```

```
                                        RECESSION DATA
                          STRTQ=   -2.00     QRCSN=   -0.10     RTIOR= 1.60

               UNIT HYDROGRAPH 14 END-OF-PERIOD ORDINATES, LAG=   2.46 HOURS, CP= 0.62  VOL= 1.00
         69.        223.       299.       238.       151.        96.        61.        39.        25.        16.
         10.          6.         4.         3.

      0                                            END-OF-PERIOD FLOW
    MO.DA  HR.MN  PERIOD   RAIN   EXCS   LOSS      COMP Q      MO.DA  HR.MN  PERIOD   RAIN   EXCS   LOSS     COMP Q

                                                                             SUM   26.09  22.64   3.45    35390.
                                                                                  ( 663.)( 575.)(  88.)(  993.64)


       **********         **********         **********         **********         **********

                                            HYDROGRAPH ROUTING

                ROUTE UNDER BARGE CANAL THRU STRUCTURE # 43
                      ISTAQ    ICOMP    IECON    ITAPE     JPLT     JPRT    INAME   ISTAGE    IAUTO
                        101        1        0        0        0        0        1        0        0
                                             ROUTING DATA
                 QLOSS    CLOSS      AVG     IRES    ISAME     IOPT     IPMP              LSTR
                   0.0    0.000     0.00        1        1        0        0                 0

                      NSTPS    NSTDL      LAG    AMSKK        X      TSK    STORA   ISPRAT
                          1        0        0    0.000    0.000    0.000      -1.        0

  STORAGE        0.0      3.00      8.00     13.00     17.00     22.00   2300.00
  OUTFLOW       0.00     67.00    120.00    143.00    155.00    164.00    168.00
    STAGE     500.00    502.00    504.00    506.00    508.00    510.00    512.00    514.00    516.00
     FLOW       0.00     25.00     67.00    102.00    121.00    132.00    143.00    155.00    164.00

MAXIMUM STAGE IS     516.1
MAXIMUM STAGE IS     516.2
MAXIMUM STAGE IS     516.3
MAXIMUM STAGE IS     516.4
MAXIMUM STAGE IS     516.6
MAXIMUM STAGE IS     516.8
```

```
MAXIMUM STAGE IS     3??.?

**********          **********          **********          **********          **********

                              SUB-AREA RUNOFF COMPUTATION

            RUNOFF SUBAREA 2
                 ISTAQ   ICOMP   IECON   ITAPE    JPLT    JPRT   INAME  ISTAGE   IAUTO
                  200       0       0       0       1       0       1       0       0

                                    HYDROGRAPH DATA
        IHYDG    IUHG   TAREA    SNAP   TRSDA   TRSPC   RATIO   ISNOW   ISAME   LOCAL
            1       1    3.66    0.00    7.02    0.50   0.000       0       1       0

                                     PRECIP DATA
              SPFE     PMS      R6     R12     R24     R48     R72     R96
              0.00   21.60  117.00  127.00  141.00  151.00    0.00    0.00
TRSPC COMPUTED BY THE PROGRAM IS  .800

                                      LOSS DATA
   LROPT   STRKR   DLTKR   RTIOL   ERAIN   STRKS   RTIOK   STRTL   CNSTL   ALSMX   RTIMP
       0    0.00    0.00    1.00    0.00    0.00    1.00    1.00    0.10    0.00    0.04

                                  UNIT HYDROGRAPH DATA
                             TP=  1.85     CP=0.63    NTA=  0

                                    RECESSION DATA
                      STRTQ=   -2.00    QRCSN=   -0.10    RTIOR= 1.60

       UNIT HYDROGRAPH  8 END-OF-PERIOD ORDINATES, LAG=   1.24 HOURS, CP= 0.62  VOL= 1.00
    47.     131.     132.      67.      28.      12.       5.       2.

     0                              END-OF-PERIOD FLOW
MO.DA  HR.MN  PERIOD   RAIN   EXCS   LOSS   COMP Q      MO.DA  HR.MN  PERIOD   RAIN   EXCS   LOSS    COMP Q

                                                                     SUM  26.09  22.49   3.60    12438.
                                                                         ( 663.)( 571.)(  91.)(  352.20)


**********          **********          **********          **********          **********

                                 COMBINE HYDROGRAPHS

            COMBINE 2 HYDROGRAPHS 1 & 2
                 ISTAQ   ICOMP   IECON   ITAPE    JPLT    JPRT   INAME  ISTAGE   IAUTO
                  200       2       0       0       0       0       1       0       0
```

```
**********          **********          **********          **********          **********

                                   HYDROGRAPH ROUTING

                 ROUTE TO RESERVOIR
                      ISTAQ   ICOMP   IECON   ITAPE    JPLT    JPRT   INAME  ISTAGE   IAUTO
                        621       1       0       0       0       0       1       0       0
                                              ROUTING DATA
                QLOSS   CLOSS     AVG    IRES   ISAME    IOPT    IPMP            LSTR
                  0.0   0.000    0.00       1       1       0       0               0

                      NSTPS   NSTDL     LAG   AMSKK       X     TSK   STORA  ISPRAT
                          1       0       0   0.000   0.000   0.000     -1.       0


NORMAL DEPTH CHANNEL ROUTING
----------------------------

     QN(1)   QN(2)   QN(3)   ELNVT   ELMAX   RLNTH     SEL
    0.0400  0.0400  0.0400   461.0   480.0    800. 0.03500


     CROSS SECTION COORDINATES--STA,ELEV,STA,ELEV--ETC
        0.00  480.00   10.00  479.00   15.00  470.00   20.00  461.00   50.00  461.00
       55.00  470.00   60.00  479.00   70.00  480.00

 STORAGE        0.00      0.56      1.14      1.74      2.37      3.01      3.67      4.36      5.06
                6.53      7.30      8.08      8.89      9.71     10.56     11.43     12.32     13.22

 OUTFLOW        0.00    205.25    641.54   1244.42   1987.71   2856.27   3840.37   4933.44   6130.89
             9369.06  10843.13  12751.27  14792.87  16967.45  19274.62  21714.12  24285.81  26989.68

   STAGE      461.00    462.00    463.00    464.00    465.00    466.00    467.00    468.00    469.00
              471.00    472.00    473.00    474.00    475.00    476.00    477.00    478.00    479.00

    FLOW        0.00    205.25    641.54   1244.42   1987.71   2856.27   3840.37   4933.44   6130.89
             9369.06  10843.13  12751.27  14792.87  16967.45  19274.62  21714.12  24285.81  26989.68

MAXIMUM STAGE IS     462.7

MAXIMUM STAGE IS     463.1

MAXIMUM STAGE IS     463.4

MAXIMUM STAGE IS     463.7

MAXIMUM STAGE IS     463.9

MAXIMUM STAGE IS     464.4
```

```
MAXIMUM STAGE IS     464.9


          **********          **********          **********          **********          **********

                                          SUB-AREA RUNOFF COMPUTATION

                         RUNOFF SUBAREA 3
                                  ISTAQ    ICOMP    IECON    ITAPE     JPLT     JPRT    INAME   ISTAGE    IAUTO
                                   300        0        0        0        0        0        1        0        0

                                                 HYDROGRAPH DATA
                      IHYDG    IUHG    TAREA     SNAP    TRSDA    TRSPC    RATIO    ISNOW    ISAME    LOCAL
                          1       1     0.32     0.00     7.02     0.00    0.000        0        1        0

                                                   PRECIP DATA
                              SPFE      PMS       R6      R12      R24      R48      R72      R96
                              0.00    21.60   117.30   127.00   141.00   151.00     0.00     0.00
TRSPC COMPUTED BY THE PROGRAM IS 0.800

                                                    LOSS DATA
                  LROPT   STRKR   DLTKR   RTIOL   ERAIN   STRKS   RTIOK   STRTL   CNSTL   ALSMX   RTIMP
                      0    0.00    0.00    1.00    0.00    0.00    1.00    1.00    0.10    0.00    0.03

                                              UNIT HYDROGRAPH DATA
                                          TP=  1.55     CP=0.65     NTA=  0

                                                 RECESSION DATA
                                   STRTQ=    -2.00     QRCSN=    -0.10     RTIOR= 1.00

                    UNIT HYDROGRAPH  8 END-OF-PERIOD ORDINATES, LAG=   1.54 HOURS, CP= 0.62  VOL= 1.00
                 37.       75.       54.       23.       10.        4.        2.        1.

                                                END-OF-PERIOD FLOW
           MO.DA  HR.MN  PERIOD   RAIN   EXCS   LOSS    COMP Q      MO.DA  HR.MN  PERIOD   RAIN   EXCS   LOSS    COMP Q

                                                                                      SUM  26.09  22.45   3.64    6152.
                                                                                         ( 663.)( 570.)(  92.)( 174.21)


          **********          **********          **********          **********          **********

                                                HYDROGRAPH ROUTING

                         ROUTE UNDER CANAL THRU STRUCTURE # 44
                                  ISTAQ    ICOMP    IECON    ITAPE     JPLT     JPRT    INAME   ISTAGE    IAUTO
                                   301        1        0        0        0        0        1        0        0
                                                  ROUTING DATA
```

QLOSS	CLOSS	AVG	IRES	ISAME	IOPT	IPMP		LSTR
0.0	0.000	0.00	1	1	0	0		0

	NSTPS	NSTDL	LAG	AMSKK	X	TSK	STORA	ISPRAT
	1	0	0	0.000	0.000	0.000	-1.	0

STORAGE	0.0	3.5[illegible]	7.0[illegible]	23.9[illegible]	46.0[illegible]	92.[illegible]	170.00	305.00	
OUTFLOW	36.0[illegible]	54.00	67.00	79.0[illegible]	88.[illegible]	97.[illegible]	105.00	114.00	
STAGE	496.70	498.00	500.00	502.00	504.00	506.00	508.00	510.00	512.00
FLOW	0.0	16.00	36.00	54.00	67.00	79.00	88.00	97.00	105.00

MAXIMUM STAGE IS 506.4

MAXIMUM STAGE IS 508.3

MAXIMUM STAGE IS 509.5

MAXIMUM STAGE IS 510.4

MAXIMUM STAGE IS 511.2

MAXIMUM STAGE IS 512.5

MAXIMUM STAGE IS 513.4

********** ********** ********** ********** **********

HYDROGRAPH ROUTING

ROUTE TO RESERVOIR

	ISTAQ	ICOMP	IECON	ITAPE	JPLT	JPRT	INAME	ISTAGE	IAUTO
	6[illegible]1	1	0	0	0	0	1	0	0

ROUTING DATA

QLOSS	CLOSS	AVG	IRES	ISAME	IOPT	IPMP		LSTR
0.0	0.000	0.00	1	1	0	0		0

	NSTPS	NSTDL	LAG	AMSKK	X	TSK	STORA	ISPRAT
	1	0	0	0.000	0.000	0.000	-1.	0

NORMAL DEPTH CHANNEL ROUTING

QN(1)	QN(2)	QN(3)	ELNVT	ELMAX	RLNTH	SEL
0.0700	0.0400	0.0700	461.0	480.0	1990.	0.02100

```
CROSS SECTION COORDINATES--STA,ELEV,STA,ELEV--ETC
 100.00  480.00  195.00  475.00  350.00  464.00  359.00  461.00  371.00  461.00
 380.00  464.00  470.00  475.00  790.00  480.00
```

STORAGE	0.00	0.65	1.57	2.75	4.55	7.35	11.13	15.91	21.68
	36.17	44.94	54.67	65.40	77.12	91.12	108.70	129.85	154.58
OUTFLOW	0.00	70.85	250.15	545.94	1066.85	1804.82	2807.71	4116.23	5767.56
	10236.31	13118.45	16473.47	20330.81	24719.09	28373.86	33513.76	39905.80	47579.54
STAGE	461.00	462.00	463.00	464.00	465.00	466.00	467.00	468.00	469.00
	471.00	472.00	473.00	474.00	475.00	476.00	477.00	478.00	479.00
FLOW	0.00	70.85	250.15	545.94	1066.85	1804.82	2807.71	4116.23	5767.56
	10236.31	13118.45	16473.47	20330.81	24719.09	28373.86	33513.76	39905.80	47579.54

MAXIMUM STAGE IS 462.1

MAXIMUM STAGE IS 462.1

MAXIMUM STAGE IS 462.1

MAXIMUM STAGE IS 462.2

MAXIMUM STAGE IS 462.2

MAXIMUM STAGE IS 462.2

MAXIMUM STAGE IS 462.2

********** ********** ********** ********** **********

SUB-AREA RUNOFF COMPUTATION

RUNOFF SUBAREA 4

ISTAQ	ICOMP	IECON	ITAPE	JPLT	JPRT	INAME	ISTAGE	IAUTO
400	0	0	0	0	0	1	0	0

HYDROGRAPH DATA

IHYDG	IUHG	TAREA	SNAP	TRSDA	TRSPC	RATIO	ISNOW	ISAME	LOCAL
1	1	3.04	0.00	7.02	0.00	0.000	0	1	0

PRECIP DATA

SPFE	PMS	R6	R12	R24	R48	R72	R96
0.00	21.60	117.00	127.00	141.00	151.00	0.00	0.00

TRSPC COMPUTED BY THE PROGRAM IS 0.800

LOSS DATA

```
                                          LOSS DATA
   LROPT   STRKR   DLTKR   RTIOL   ERAIN   STRKS   RTIOK   STRTL   CNSTL   ALSMX   RTIMP
      0     0.00    0.00    1.00    0.00    0.00    1.00    1.00    0.10    0.00    0.03

                                  UNIT HYDROGRAPH DATA
                            TP=  2.45     CP=0.63     NTA=  0

                                     RECESSION DATA
                        STRTQ=    -2.00      QRCSN=    -0.10      RTIOR= 1.60

          UNIT HYDROGRAPH 14 END-OF-PERIOD ORDINATES, LAG=   2.46 HOURS, CP= 0.62  VOL= 1.00
     109.       352.       471.       375.       236.       152.       96.        61.        39.        25.
      16.        10.         6.         4.

    0                                        END-OF-PERIOD FLOW
MO.DA  HR.MN  PERIOD   RAIN   EXCS   LOSS    COMP Q       MO.DA  HR.MN  PERIOD   RAIN   EXCS   LOSS    COMP Q

                                                                          SUM  26.09  22.45   3.64   54688.
                                                                              ( 663.)( 570.)(  92.)( 1554.25)


        **********          **********          **********          **********          **********

                                          HYDROGRAPH ROUTING

                    ROUTE UNDER RAILROAD
                              ISTAQ   ICOMP   IECON   ITAPE   JPLT   JPRT   INAME  ISTAGE  IALTO
                                4 1      1       0       0      0      0      1       0      0
                                                  ROUTING DATA
                     QLOSS    CLOSS     AVG    IRES   ISAME   IOPT   IPMP          LSTR
                       0.0    0.000    0.00      1       1      0      0             0

                              NSTPS   NSTDL     LAG   AMSKK       X     TSK   STORA  ISPRAT
                                 1       0       0    0.000   0.000   0.000    -1.      0

  STORAGE        0.00        6.00       14.00       30.00       54.00      100.00      170.00      270.00      400.00
               600.00      600.00

  OUTFLOW        0.00       35.00      105.00      185.00      285.00      350.00      400.00      450.00      505.00
              9800.00    26800.00

    STAGE      512.40      514.40      516.40      518.40      520.40      522.40      524.40      526.40      528.40
               531.00      532.00

     FLOW        0.00       35.00      105.00      185.00      285.00      350.00      400.00      450.00      505.00
              9800.00    26800.00

MAXIMUM STAGE IS      527.5

MAXIMUM STAGE IS      535.1
```

```
MAXIMUM STAGE IS     537.2

MAXIMUM STAGE IS     530.5

MAXIMUM STAGE IS     530.4

MAXIMUM STAGE IS     530.7

MAXIMUM STAGE IS     530.7


        **********        **********        **********        **********        **********

                                        HYDROGRAPH ROUTING

                 ROUTE TO BARGE CANAL
                      ISTAQ    ICOMP    IECON    ITAPE     JPLT     JPRT    INAME   ISTAGE    IAUTO
                        500        1        0        0        0        0        1        0        0
                                              ROUTING DATA
                 QLOSS    CLOSS      AVG     IRES    ISAME     IOPT     IPMP              LSTR
                   0.0    0.000     0.00        1        1        0        0                 0

                      NSTPS    NSTDL      LAG    AMSKK        X      TSK    STORA   ISPRAT
                          1        0        0    0.000    0.000    0.000       1.        0


NORMAL DEPTH CHANNEL ROUTING
----------------------------

      QN(1)    QN(2)    QN(3)    ELNVT    ELMAX    RLNTH      SEL
     0.0700   0.0400   0.0700    500.0    515.0    1600.  0.00750

      CROSS SECTION COORDINATES--STA,ELEV,STA,ELEV--ETC
        100.00  510.00  330.00  505.00  386.00  503.00  394.00  500.00  406.00  500.00
        415.00  503.00  540.00  505.00  730.00  510.00

 STORAGE       0.00       0.41       0.96       1.63       2.47       4.76       9.12      15.52      23.85
              46.29      63.39      76.41      94.25     112.52     130.78     149.05     167.32     185.59

 OUTFLOW       0.00      27.79      95.29     202.74     360.95     637.46    1096.01    1809.52    2829.65
            5955.29    8144.05   10802.74   14188.80   18535.06   23372.63   28676.77   34427.15   40606.64

   STAGE     500.00     500.79     501.58     502.37     503.16     503.95     504.74     505.53     506.32
             507.89     508.68     509.47     510.26     511.05     511.84     512.63     513.42     514.21

    FLOW       0.00      27.79      95.29     202.74     360.95     637.46    1096.01    1809.52    2829.65
            5955.29    8144.05   10802.74   14188.80   18535.06   23372.63   28676.77   34427.15   40606.64
```

```
MAXIMUM STAGE IS     503.3
MAXIMUM STAGE IS     504.6
MAXIMUM STAGE IS     506.1
MAXIMUM STAGE IS     507.2
MAXIMUM STAGE IS     507.2
MAXIMUM STAGE IS     508.2
MAXIMUM STAGE IS     508.4

          **********          **********          **********          **********          **********

                                          SUB-AREA RUNOFF COMPUTATION

                         RUNOFF SUBAREA 5
                                 ISTAQ    ICOMP    IECON    ITAPE    JPLT    JPRT    INAME   ISTAGE   IAUTO
                                  5.0       0        0        0        0       0       1        0        0

                                                  HYDROGRAPH DATA
                     IHYDG    IUHG   TAREA    SNAP    TRSDA    TRSPC    RATIO    ISNOW    ISAME    LOCAL
                        1       1     3.44    0.00    7.92     0.00     0.000      0        1        0

                                                    PRECIP DATA
                            SPFE     PMS      R6      R12      R24      R48      R72      R96
                            0.00    21.60   117.00  127.00   141.00   151.00    0.00     0.00
TRSPC COMPUTED BY THE PROGRAM IS 0.800

                                                     LOSS DATA
              LROPT   STRKR   DLTKR   RTIOL   ERAIN   STRKS   RTIOK   STRTL   CNSTL   ALSMX   RTIMP
                0      0.00    0.00    1.00    0.00    0.00    1.00    1.00    0.10    0.00    0.02

                                               UNIT HYDROGRAPH DATA
                                         TP=  1.20     CP=0.63     NTA=  0

                                                  RECESSION DATA
                                 STRTQ=   -2.00     QRCSN=   -0.10     RTIOR= 1.60

                   UNIT HYDROGRAPH  5 END-OF-PERIOD ORDINATES, LAG=   1.19 HOURS, CP= 0.62  VOL= 1.00
              76.        129.        63.        14.        3.

           0                                   END-OF-PERIOD FLOW
     MO.DA  HR.MN  PERIOD   RAIN   EXCS   LOSS    COMP Q      MO.DA  HR.MN  PERIOD   RAIN   EXCS   LOSS    COMP Q

                                                                            SUM  26.09  22.42   3.68    8853.
```

(665.7(369.7(95.7(230.69)

********** ********** ********** ********** **********

COMBINE HYDROGRAPHS

COMBINE 2 HYDROGRAPHS 4 & 5

ISTAQ	ICOMP	IECON	ITAPE	JPLT	JPRT	INAME	ISTAGE	IAUTO
500	2	0	0	0	0	1	0	0

********** ********** ********** ********** **********

HYDROGRAPH ROUTING

ROUTE UNDER BARGE CANAL THRU STRUCTURE # 45

ISTAQ	ICOMP	IECON	ITAPE	JPLT	JPRT	INAME	ISTAGE	IAUTO
501	1	0	0	0	0	1	0	0

ROUTING DATA

QLOSS	CLOSS	AVG	IRES	ISAME	IOPT	IPMP		LSTR
0.0	0.000	0.00	1	1	0	0		0

NSTPS	NSTDL	LAG	AMSKK	X	TSK	STORA	ISPRAT
1	0	0	0.000	0.000	0.000	-1.	0

STORAGE	0.00	1.4.	3.00	10.00	25.00	55.00	97.00	163.00	250.00
OUTFLOW	52.00	77.00	98.00	112.00	127.00	140.00	152.00	164.00	174.00
STAGE	495.70 516.00	496.00 517.00	500.00	502.00	504.00	506.00	508.00	510.00	512.00
FLOW	0.00 174.00	37.00 180.00	52.00	77.00	98.00	112.00	127.00	140.00	152.00

MAXIMUM STAGE IS 516.1

MAXIMUM STAGE IS 516.2

MAXIMUM STAGE IS 516.3

MAXIMUM STAGE IS 516.4

MAXIMUM STAGE IS 516.6

MAXIMUM STAGE IS 516.8

MAXIMUM STAGE IS 517.1

```
**********          **********          **********          **********          **********

                                        HYDROGRAPH ROUTING

                    ROUTE TO RESERVOIR
                              ISTAQ   ICOMP   IECON   ITAPE    JPLT    JPRT   INAME  ISTAGE   IAUTO
                                 -1       1       0       0       0       0       1       0       0
                                                       ROUTING DATA
                      QLOSS   CLOSS     AVG    IRES   ISAME    IOPT    IPMP            LSTR
                        0.0   0.000    0.00       1       1       0       0               0

                              NSTPS   NSTDL     LAG   AMSKK       X     TSK   STORA  ISPRAT
                                  1       0       0   0.000   0.000   0.000     -1.       0

NORMAL DEPTH CHANNEL ROUTING
----------------------------

      QN(1)    QN(2)    QN(3)   ELNVT   ELMAX   RLNTH     SEL
      .0700   0.0400   0.0700   461.0   480.0   2200. 0.01500

      CROSS SECTION COORDINATES--STA,ELEV,STA,ELEV--ETC
        100.00  480.00  320.00  470.00  450.00  465.00  461.00  461.00  475.00  461.00
        465.00  465.00  530.00  470.00  780.00  480.00

 STORAGE       0.00       0.86       2.02       3.41       5.05       7.70      12.12      18.31      26.26
              47.78      61.94      78.48      97.43     118.69     142.35     168.38     196.79     227.58

 OUTFLOW       0.00      72.11     244.64     515.61     892.59    1500.59    2343.63    3490.13    4997.15
            9243.79   12151.53   15687.88   19909.02   24871.09   30628.75   37234.97   44741.09   53197.01

   STAGE     461.00     462.00     463.00     464.00     465.00     466.00     467.00     468.00     469.00
             471.00     472.00     473.00     474.00     475.00     476.00     477.00     478.00     479.00

    FLOW       0.00      72.11     244.64     515.61     892.59    1500.59    2343.63    3490.13    4997.15
            9243.79   12151.53   15687.88   19909.02   24871.09   30628.75   37234.97   44741.09   53197.01

MAXIMUM STAGE IS     462.6

MAXIMUM STAGE IS     462.6

MAXIMUM STAGE IS     462.6

MAXIMUM STAGE IS     462.6

MAXIMUM STAGE IS     462.6
```

```
MAXIMUM STAGE IS     462.6

MAXIMUM STAGE IS     462.6


     **********        **********        **********        **********        **********

                              SUB-AREA RUNOFF COMPUTATION

              RUNOFF SUBAREA 6
                    ISTAQ    ICOMP    IECON    ITAPE    JPLT    JPRT   INAME  ISTAGE   IAUTO
                     6.0       0        0        0        0       0      1       0       0

                                   HYDROGRAPH DATA
            IHYDG    IUHG    TAREA     SNAP    TRSDA    TRSPC    RATIO   ISNOW   ISAME   LOCAL
               1       1      0.62     0.00     7.02     0.00    0.000     0       1       0

                                     PRECIP DATA
                  SPFE      PMS      R6      R12      R24      R48      R72      R96
                  0.00    21.60   117.00   127.00   141.00   151.00    0.00     0.00
TRSPC COMPUTED BY THE PROGRAM IS 0.800

                                      LOSS DATA
         LROPT   STRKR   DLTKR   RTIOL   ERAIN   STRKS   RTIOK   STRTL   CNSTL   ALSMX   RTIMP
           0      0.00    0.00    1.00    0.00    0.00    1.00    1.00    0.10    0.00    0.31

                                UNIT HYDROGRAPH DATA
                          TP=  1.15    CP=0.63     NTA=  0

                                   RECESSION DATA
                     STRTQ=   -2.00    QRCSN=   -0.10    RTIOR= 1.60

         UNIT HYDROGRAPH  5 END-OF-PERIOD ORDINATES, LAG=   1.14 HOURS, CP= 0.62  VOL= 1.00
       315.      166.      82.       14.        2.

      0                               END-OF-PERIOD FLOW
  MO.DA  HR.MN  PERIOD   RAIN   EXCS   LOSS    COMP Q      MO.DA  HR.MN  PERIOD   RAIN   EXCS   LOSS    COMP Q

                                                                         SUM  26.09  23.50   2.59   12848.
                                                                             ( 663.)( 597.)( 66.)( 363.81)


     **********        **********        **********        **********        **********

                                 COMBINE HYDROGRAPHS

              COMBINE 4 HYDROGRAPHS   TOTAL RESERVOIR INFLOW
                    ISTAQ    ICOMP    IECON    ITAPE    JPLT    JPRT   INAME  ISTAGE   IAUTO
```

```
**********          **********          **********          **********          **********

                              HYDROGRAPH ROUTING

        ROUTE THRU RESERVOIR AND OVER SPILLWAY
                  ISTAQ    ICOMP    IECON    ITAPE     JPLT     JPRT    INAME   ISTAGE    IAUTO
                    6.0        1        0        0        0        0        1        0        0
                                           ROUTING DATA
         QLOSS    CLOSS      AVG     IRES    ISAME     IOPT     IPMP             LSTR
           0.0    0.000     0.00        1        1        0        0                0

                  NSTPS    NSTDL      LAG    AMSKK        X      TSK    STORA   ISPRAT
                      1        0        0    0.000    0.000    0.000    -458.        0

  CAPACITY=        .      460.     810.    1100.

 ELEVATION=     444.      458.     461.     463.

                   CREL    SPWID     COQW     EXPW    ELEVL     COQL    CAREA     EXPL
                  458.0    218.0      2.9      1.5      0.0      0.0      0.0      0.0

                                                 DAM DATA
                                   TOPEL     COQD     EXPD    DAMWID
                                   463.0      2.6      1.5     2550.

PEAK OUTFLOW IS      953. AT TIME  42.00 HOURS

PEAK OUTFLOW IS     1307. AT TIME  42.00 HOURS

PEAK OUTFLOW IS     1657. AT TIME  42.00 HOURS

PEAK OUTFLOW IS     2005. AT TIME  42.00 HOURS

PEAK OUTFLOW IS     2353. AT TIME  42.00 HOURS

PEAK OUTFLOW IS     3049. AT TIME  42.00 HOURS

PEAK OUTFLOW IS     3692. AT TIME  42.00 HOURS

**********          **********          **********          **********          **********

                              HYDROGRAPH ROUTING

        ROUTE BELOW SPILLWAY
                  ISTAQ    ICOMP    IECON    ITAPE     JPLT     JPRT    INAME   ISTAGE    IAUTO
```

```
                              ROUTING DATA
      QLOSS   CLOSS     AVG    IRES   ISAME    IOPT    IPMP            LSTR
        0.0   0.000    0.00       1       1       0       0               0

              NSTPS   NSTDL     LAG   AMSKK       X     TSK   STORA  ISPRAT
                  1               0   0.000   0.000   0.000     -1.       0

NORMAL DEPTH CHANNEL ROUTING
----------------------------

     QN(1)   QN(2)   QN(3)   ELNVT   ELMAX   RLNTH     SEL
    0.0400  0.0350  0.0400   453.7   459.0    165. 0.00300

     CROSS SECTION COORDINATES--STA,ELEV,STA,ELEV--ETC
      100.00  457.00  150.00  457.00  190.00  457.00  200.00  453.70  420.00  453.70
      430.00  457.00  480.00  458.00  550.00  459.00

 STORAGE        0.00      0.23      0.47      0.71      0.94      1.18      1.43      1.67      1.92
                2.41      2.66      2.93      3.29      3.67      4.05      4.46      4.88      5.33

 OUTFLOW        0.00     61.15    194.33    382.37    618.27    897.78   1217.91   1576.46   1971.65
             2866.52   3364.00   3897.97   4507.43   5177.74   5905.90   6690.05   7532.09   8434.25

   STAGE      453.70    453.98    454.26    454.54    454.82    455.09    455.37    455.65    455.93
              456.49    456.77    457.05    457.33    457.60    457.88    458.16    458.44    458.72

    FLOW        0.00     61.15    194.33    382.37    618.27    897.78   1217.91   1576.46   1971.65
             2866.52   3364.00   3897.97   4507.43   5177.74   5905.90   6690.05   7532.09   8434.25

MAXIMUM STAGE IS     455.1

MAXIMUM STAGE IS     455.4

MAXIMUM STAGE IS     455.7

MAXIMUM STAGE IS     456.0

MAXIMUM STAGE IS     456.2

MAXIMUM STAGE IS     456.6

MAXIMUM STAGE IS     456.9

          **********       **********       **********       **********       **********
```

PEAK FLOW AND STORAGE (END OF PERIOD) SUMMARY FOR MULTIPLE PLAN-RATIO ECONOMIC COMPUTATIONS
FLOWS IN CUBIC FEET PER SECOND (CUBIC METERS PER SECOND)
AREA IN SQUARE MILES (SQUARE KILOMETERS)

OPERATION	STATION	AREA	PLAN	RATIO 1 0.20	RATIO 2 0.30	RATIO 3 0.40	RATIO 4 0.50	RATIO 5 0.60	RATIO 6 0.80	RATIO 7 1.00
				RATIOS APPLIED TO FLOWS						
HYDROGRAPH AT	100	1.93	1	860.	1290.	1720.	2150.	2580.	3440.	4300.
	(	5.00)	(	24.36)(	36.53)(	48.71)(	60.89)(	73.07)(	97.42)(	121.78)(
ROUTED TO	101	1.93	1	164.	165.	165.	166.	166.	167.	168.
	(	5.00)	(	4.66)(	4.67)(	4.69)(	4.69)(	4.71)(	4.74)(	4.76)(
HYDROGRAPH AT	200	0.66	1	349.	523.	697.	871.	1046.	1394.	1743.
	(	1.71)	(	9.87)(	14.80)(	19.74)(	24.67)(	29.61)(	39.48)(	49.35)(
2 COMBINED	200	2.59	1	513.	687.	862.	1036.	1210.	1559.	1908.
	(	6.71)	(	14.52)(	19.46)(	24.40)(	29.34)(	34.28)(	44.16)(	54.04)(
ROUTED TO	601	2.59	1	514.	[illegible]	862.	1039.	1214.	1562.	1911.
	(	6.71)	(	14.54)(	19.47)(	24.42)(	29.42)(	34.37)(	44.24)(	54.11)(
HYDROGRAPH AT	300	0.32	1	181.	271.	361.	451.	542.	722.	903.
	(	0.83)	(	5.11)(	7.67)(	10.22)(	12.78)(	15.33)(	20.45)(	25.56)(
ROUTED TO	301	0.32	1	81.	89.	95.	99.	102.	107.	112.
	(	0.83)	(	2.29)(	2.52)(	2.68)(	2.80)(	2.89)(	3.04)(	3.16)(
ROUTED TO	601	0.32	1	81.	89.	95.	99.	102.	108.	112.
	(	0.83)	(	2.30)(	2.52)(	2.69)(	2.80)(	2.89)(	3.04)(	3.17)(
HYDROGRAPH AT	400	3.04	1	1353.	2030.	2706.	3383.	4059.	5412.	6765.
	(	7.88)	(	38.31)(	57.47)(	76.63)(	95.78)(	114.94)(	153.25)(	191.56)(
ROUTED TO	401	3.04	1	480.	1119.	2473.	4957.	3975.	7450.	6836.
	(	7.88)	(	13.60)(	31.69)(	70.03)(	140.38)(	112.55)(	210.96)(	193.59)(
ROUTED TO	500	3.04	1	480.	1012.	2505.	4346.	4322.	6745.	7234.
	(	7.88)	(	13.59)(	28.65)(	70.93)(	123.07)(	122.39)(	190.99)(	204.83)(
HYDROGRAPH AT	500	0.44	1	282.	423.	564.	705.	846.	1128.	1410.
	(	1.15)	(	7.98)(	11.98)(	15.97)(	19.96)(	23.95)(	31.93)(	39.92)(
2 COMBINED	500	3.49	1	640.	1053.	2595.	4633.	4666.	7576.	8273.
	(	[illegible]	(	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

	(	[illegible]	(	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	
ROUTED TO	501	3.49	1	174.	175.	176.	177.	177.	179.	180.	
	(	9.03)	(	4.94)(	4.96)(	4.98)(	5.00)(	5.02)(	5.06)(	5.11)(	
ROUTED TO	601	3.49	1	174.	175.	176.	177.	177.	179.	180.	
	(	9.03)	(	4.94)(	4.96)(	4.98)(	5.00)(	5.02)(	5.06)(	5.11)(	
HYDROGRAPH AT	600	0.62	1	403.	604.	806.	1007.	1209.	1612.	2015.	
	(	1.61)	(	11.41)(	17.12)(	22.82)(	28.53)(	34.23)(	45.64)(	57.05)(	
4 COMBINED	600	7.02	1	1129.	1520.	1905.	2285.	2666.	3421.	4172.	
	(	18.18)	(	31.96)(	43.05)(	53.93)(	64.71)(	75.49)(	96.88)(	118.15)(	
ROUTED TO	600	7.02	1	953.	1307.	1657.	2005.	2353.	3049.	3692.	
	(	18.18)	(	27.00)(	37.02)(	46.93)(	56.78)(	66.64)(	86.33)(	104.55)(	
ROUTED TO	600.1	7.02	1	953.	1307.	1657.	2005.	2354.	3049.	3693.	
	(	18.18)	(	26.98)(	37.01)(	46.92)(	56.78)(	66.65)(	86.34)(	104.58)(	

PLAN 1 STATION 101

RATIO	MAXIMUM FLOW,CFS	MAXIMUM STAGE,FT	TIME HOURS
0.20	164.	516.1	47.00
0.30	165.	516.2	49.00
0.40	165.	516.3	53.00
0.50	166.	516.4	55.00
0.60	166.	516.6	59.00
0.80	167.	516.8	65.00
1.00	168.	517.1	69.00

PLAN 1 STATION 601

RATIO	MAXIMUM FLOW,CFS	MAXIMUM STAGE,FT	TIME HOURS
0.20	514.	462.7	42.00
0.30	688.	463.1	42.00
0.40	862.	463.4	42.00
0.50	1039.	463.7	42.00
0.60	1214.	463.9	42.00
0.80	1562.	464.4	42.00
1.00	1911.	464.9	42.00

PLAN 1 STATION 301

RATIO	MAXIMUM FLOW,CFS	MAXIMUM STAGE,FT	TIME HOURS

RATIO	FLOW,CFS	STAGE,FT	HOURS
0.20	81.	506.4	44.00
0.30	89.	508.3	44.00
0.40	95.	509.5	44.00
0.50	99.	510.4	45.00
0.60	102.	511.2	45.00
0.80	107.	512.5	45.00
1.00	112.	513.4	46.00

PLAN 1 STATION 601

RATIO	MAXIMUM FLOW,CFS	MAXIMUM STAGE,FT	TIME HOURS
0.20	81.	462.1	43.00
0.30	89.	462.1	44.00
0.40	95.	462.1	44.00
0.50	99.	462.2	44.00
0.60	102.	462.2	45.00
0.80	108.	462.2	45.00
1.00	112.	462.2	45.00

PLAN 1 STATION 401

RATIO	MAXIMUM FLOW,CFS	MAXIMUM STAGE,FT	TIME HOURS
0.20	460.	527.5	46.00
0.30	1119.	530.1	45.00
0.40	2473.	530.2	44.00
0.50	4957.	530.5	43.00
0.60	3975.	530.4	43.00
0.80	7450.	530.7	42.00
1.00	6836.	530.7	42.00

PLAN 1 STATION 500

RATIO	MAXIMUM FLOW,CFS	MAXIMUM STAGE,FT	TIME HOURS
0.20	480.	503.5	46.00
0.30	1212.	504.6	45.00
0.40	2505.	506.1	44.00
0.50	4346.	507.2	43.00
0.60	4322.	507.2	43.00
0.80	6745.	508.2	42.00
1.00	7234.	508.4	42.00

PLAN 1 STATION 501

MAXIMUM MAXIMUM TIME

RATIO	MAXIMUM FLOW,CFS	MAXIMUM STAGE,FT	TIME HOURS
0.20	174.	516.1	62.00
0.30	175.	516.2	70.00
0.40	176.	516.3	73.00
0.50	177.	516.4	76.00
0.60	177.	516.6	80.00
0.80	179.	516.8	85.00
1.00	180.	517.1	90.00

PLAN 1 STATION 601

RATIO	MAXIMUM FLOW,CFS	MAXIMUM STAGE,FT	TIME HOURS
0.20	174.	462.6	62.00
0.30	175.	462.6	70.00
0.40	176.	462.6	73.00
0.50	177.	462.6	76.00
0.60	177.	462.6	80.00
0.80	179.	462.6	85.00
1.00	180.	462.6	90.00

SUMMARY OF DAM SAFETY ANALYSIS

PLAN 1 ....

	INITIAL VALUE	SPILLWAY CREST	TOP OF DAM
ELEVATION	458.00	458.00	463.00
STORAGE	460.	460.	1100.
OUTFLOW	0.	0.	7190.

RATIO OF PMF	MAXIMUM RESERVOIR W.S.ELEV	MAXIMUM DEPTH OVER DAM	MAXIMUM STORAGE AC-FT	MAXIMUM OUTFLOW CFS	DURATION OVER TOP HOURS	TIME OF MAX OUTFLOW HOURS	TIME OF FAILURE HOURS
0.20	459.30	0.00	612.	953.	0.00	42.00	0.00
0.30	459.60	0.00	647.	1307.	0.00	42.00	0.00
0.40	459.88	0.00	679.	1657.	0.00	42.00	0.00
0.50	460.13	0.00	709.	2005.	0.00	42.00	0.00
0.60	460.37	0.00	737.	2353.	0.00	42.00	0.00
0.80	460.82	0.00	789.	3049.	0.00	42.00	0.00
1.00	461.21	0.00	840.	3692.	0.00	42.00	0.00

PLAN 1 STATION 600.1

RATIO	MAXIMUM FLOW,CFS	MAXIMUM STAGE,FT	TIME HOURS
0.20	953.	455.1	42.00
0.30	1307.	455.4	42.00
0.40	1657.	455.7	42.00
0.50	2005.	456.0	42.00
0.60	2354.	456.2	42.00
0.80	3049.	456.6	42.00
1.00	3693.	456.9	42.00

APPENDIX D

REFERENCES

APPENDIX D

REFERENCES

1. Department of the Army, Office of the Chief of Engineers. National Program of Investigation of Dams; Appendix D: Recommended Guidelines for Safety Inspection of Dams, 1976

2. U.S. Nuclear Regulatory Commission: Design Basis Floods for Nuclear Power Plants, Regulating Guide 1.59, Revision 2, August 1977

3. Linsley and Franzini: Water Resources Engineering, Second Edition, McGraw-Hill (1972)

4. W. Viessman, Jr., J. Knapp, G. Lewis, 1977, 2nd Edition, Introduction to Hydrology

5. Ven Te Chow: Handbook of Applied Hydrology, McGraw-Hill, 1964

6. The Hydrologic Engineering Center: Computer Program 723-X6-L2010, HEC-1 Flood Hydrograph Package, User's Manual, Corps of Engineers, U.S. Army, 609 Second Street, Davis, California 95616, January 1973

7. The Hydrologic Engineering Center, Computer Program: Flood Hydrograph Package (HEC-1) Users Manual For Dam Safety

8. Soil Conservation Service (Engineering Division): Urban Hydrology for Small Watersheds, Technical Release No. 55, U.S. Department of Agriculture, January 1975

9. H.W. King, E.F. Brater: Handbook of Hydraulics, McGraw-Hill, 5th Edition, 1963

10. Ven Te Chow: Open Channel Hydraulics, McGraw-Hill, 1959

11. Bureau of Reclamation, United States Department of the Interior, Design of Small Dams: A Water Resources Technical Publication, Third Printing, 1965

12. J.T. Riedel, J.F. Appleby and R.W. Schloemer: Hydrometeorological Report No. 33, U.S. Department of Commerce, U.S. Department of Army, Corps of Engineers, Washington, D.C., April 1956. Available from Superintendent of Documents, U.S. Government Printing Office, Washington, D.C.

13. North Atlantic Regional Water Resources Study Coordinating Committee: Appendix C, Climate, Meteorology and Hydrology, February 1972

14. Sherard, Woodward, Gizienski, Clevenger: Earth and Earth - Rock Dams, John Wiley and Sons, Inc., 1963

15. U.S. Soil Conservation Service, Stillwater Outdoor Hydraulic Laboratory: Handbook of Channel Design for Soil and Water Conservation, SCS-TP-61, March 1974; revised June 1954

16. The University of the State of New York - The State Education Department, State Museum and Science Service, Geological Survey: Geologic Map of New York, 1970

17. C.A. Hartnagel, 1907, Geologic Map of the Rochester and Ontario Beach Quadrangles, New York State Museum Bulletin 114

18. Soil Survey of Monroe County, New York, 1977, United States Department of Agriculture, Soil Conservation Service

19. Guidebook for Field Trips in Wester New York, 1956, New York State Geological Association 28th Annual Meeting at the University of Rochester, N.Y.

20. William C. Larsen, P.E.: Preliminary Engineering Report; Round Pond Watershed Retention Basin Number One, Deschel Drive, March 1975

21. Erdman, Anthony, Associates: Detailed Drainage Study, Round Pond Watershed, Town of Greece, New York, June 1976

22. New York State Department of Transportation, Material Bureau: Structure Condition Report, Barge Canal - Western Section, Fairport to Lockport, February 1977

APPENDIX E

PREVIOUS INSPECTION REPORTS/AVAILABLE DOCUMENTS

William C. Larsen, P.E.
John F. Karle, P.E.
Richard N. Passero, P.E

William C. Larsen, P.E., P.C.

CIVIL - SANITARY - MUNICIPAL
ENGINEERING
44 SAGINAW DRIVE - ROCHESTER, N.Y. 14623
AREA CODE 716/473-3460

Franklin Jack Buholtz P.E.
Dale F. Green P.E.
James R. Gresens P.E.
Hakim A. Hakim P.E.
Shree R. Shrivastava P.E.
Iqbal M. Singh, P.E.
Peter J. Smith, P.E.
Yash P. Wadhwa P.E.
LaVern R. Celestino P.L.S.
Edward T. Nicoletta, P.L.S.

JGT 1575
December 21, 1977

Mr. Louis M. Concra, Jr., P.E.
Central Permit Agent
NYS DEC
50 Wolf Road
Albany, NY 12233

RE: CERTIFICATION OF CONSTRUCTION
PERMIT #828-76-140
REG. Dam #40A-4241

Dear Mr. Concra:

This letter is to advise you that construction authorized under the above referenced permit has been completed. In accordance with the special conditions of the permit, this letter shall serve as certification that the project was constructed under the direct inspection of our office and our soils consultant. In addition, the construction was performed in accordance with the plans and specifications as approved by your office, with the following exceptions:

1. The 95% compaction requirement for embankment material was relaxed to a 90% compaction requirement in certain areas. The contractor has made every attempt to obtain the 95% compaction, but due to the poor weather conditions during construction and the characteristics of the native soil being used for the embankment fill, the required compaction could not reasonably be obtained. After consultation with our soils consultant, it was decided to relax the specification to a 90% compaction requirement. To compensate for any additional settlement which might occur, the elevation of the top of the dam was raised by 0.5 ft, to an elevation of 463.5

2. From centerline station 23+0 to centerline station 32+50 a cobble "blanket" was installed along the interior bank of the toe-of-slope swale in front of the dam.

3. Crusher run stone access roadways were constructed from the ends of the dam to existing public roads. This was done in order to make the discharge control structure and the entire project area more accessible to the town's maintenance personnel. Chain link gates and fences were installed across these roadways at their exit onto the public highway.

Mr. Louis M. Concra, Jr., P.E. 12/21/77
NYS DEC
Albany NY

Upon completion of record drawings for the project, we will submit a copy to your office for your records. In the meantime, if you have any questions or wish to discuss the project further, please do not hesitate to call us.

Very truly yours,

WILLIAM C. LARSEN, P.E., P.C.

William R. VanAlst

William R. VanAlst, P.E.

WRV:pd

cc: Supervisor Don Riley
Town of Greece Engineering Dept.
Curt Rossow, Town Planner

STATE OF NEW YORK) SS
COUNTY OF MONROE)

On this 22 day of December 1977, personally appeared William R. VanAlst, P.E., Project Engineer for the firm of William C. Larsen, PE, PC, and acknowledged that he executed the foregoing instrument.

Reid L. Shaw

Notary Public

Commission Expires: 3/30/79

DAMS

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
WATER RESOURCES COMMISSION
ALBANY, NEW YORK 12201

APPLICATION FOR PERMIT

for the Construction, Reconstruction or Repair of a Dam or Other Impoundment Structure under Conservation Law, Section 429 (c).

CONSERVATION DEPARTMENT USE ONLY	
Application No.	828-76-140
Dam No.	40A-4241
Watershed	W [illegible]

Read instructions on the reverse side before completing this application. Please type or print clearly in ink.

1. NAME AND ADDRESS OF APPLICANT (First Name, M.I., Last Name; Phone No.)
Town of Greece — 225-2000
Street Address: 2505 Ridge Road West
Post Office: Rochester — State: NY — Zip Code: 14625

2. NAME AND ADDRESS OF OWNER (If different from applicant)
First Name / M.I. / Last Name:
Street Address:
Post Office / State / Zip Code:

3. TYPE OF PROJECT: ☒ Construction ☐ Reconstruction ☐ Repair

4. IS STATE-OWNED LAND TO BE USED? ☐ Yes ☒ No

5. PROPOSED STARTING DATE: July, 1976

EXPECTED COMPLETION DATE: June 1977

PROJECT DESCRIPTION

6. LOCATION OF DAM
Stream or Body of Water: Round Pond Creek
County: Monroe
Town: Greece
Give distance and direction from commonly accepted landmark: 3200'± north of Barge Canal

7. LOCATION ON U.S. GEOLOGICAL SURVEY MAP
Name of Map: Rochester West
Latitude: 43°11'38"N
Longitude: 77°42'41"W

8. PROPOSED USE FOR IMPOUNDED WATER: Temporary stormwater storage

9. STATE THE HEIGHT ABOVE SPILLCREST OF THE LOWEST PART OF THE IMMEDIATE UPSTREAM ADJOINING PROPERTY OR PROPERTIES: 15 Feet

10. IS THIS PROPOSED POND OR LAKE PART OF A PUBLIC WATER SUPPLY? ☐ Yes ☒ No
If not, where is nearest downstream public water supply intake? No intakes on stream

11. SIZE OF AREA DRAINING INTO POND OR LAKE (Acres or Square Miles): 7.38 Sq. miles

12. THE DRAINAGE AREA IS COMPOSED OF: (Total = 100%)
23 % Forest, 28 % Cropland, 27 % Pasture, 4 % Other, 4 % Swamp, 14 % Suburban Lands, 0 % Urban Lands

13. TYPE OF SPILLWAY
☒ Service Spillway – Auxiliary Spillway Combination
☐ Single Spillway
☐ Pipe Riser ONLY
☐ Other

14. DESIGNER'S ESTIMATE OF CLASS OF HAZARD (As described in "Guidelines for Small Earth Dam Designs")
☐ Class "a" ☐ Class "b" ☒ Class "c"
NOTE: Provide descriptive information on character of downstream area.

15a. SPILLWAY INFLOW DESIGN FLOOD: Frequency 60 % of MPF — Flood Peak 5500 c.f.s. — Runoff Volume 18.5 in.

15b. SERVICE SPILLWAY INFLOW DESIGN FLOOD: Frequency 50 yr — Flood Peak 578 c.f.s. — Runoff Volume 3.4

16. THE ~~SINGLE SPILLWAY OR~~ AUXILIARY SPILLWAY IS COMPOSED OF:
☐ Vegetated Earth ☒ Concrete ☐ Timber ☐ Rock-filled Crib ☐ Masonry ☐ Other

17. MAXIMUM VELOCITY WITHIN THE ~~SINGLE~~ OR AUXILIARY SPILLWAY: 40 f.p.s.

18. ~~SINGLE OR~~ AUXILIARY SPILLWAY DISCHARGE AT DESIGN HIGH WATER: 3438 c.f.s.

19. TYPE OF ENERGY DISSIPATER PROVIDED ON SINGLE SPILLWAY: ☐ Hydraulic Jump Basin ☐ Drop Structure ☒ Other See plan

20. POND OR LAKE WILL BE DRAINED BY MEANS OF: gated conduit

WATER WILL BE SUPPLIED TO RIPARIAN OWNERS DOWNSTREAM BY MEANS OF: Gated conduit

HEIGHT OF DAM ABOVE STREAM BED: 19 Feet

21. AREA-CAPACITY DATA (Answer 1, 2 and 3, OR 1, 2, 4, 5)

	Elevation, Referred To Assumed Benchmark	Surface Area	Volume Stored
1. Top of Dam	463.0 Feet	140 Acres	1036 Acre-Feet
2. Design High Water	461.0 Feet	124 Acres	772 Acre-Feet
3. Single Spillway Crest	Feet	Acres	Acre-Feet
4. Auxiliary Spillway Crest	458.0 Feet	98 Acres	460 Acre-Feet
5. Service Spillway Crest	443.98 Feet	- Acres	- Acre-Feet

TYPE OF ENERGY DISSIPATER AT OUTLET OF CONDUIT:
☐ Impact Basin ☐ Plunge Pool ☐ Hydraulic Jump Basin ☒ Other energy dissipator Blocks

IS PIPE RISER PROVIDED WITH AN ANTI-VORTEX DEVICE? ☐ Yes ☐ No N.A.

DRAWDOWN TIMES Answer 1 and 2, or 1, 3 and 4

1. Has provision been made to evacuate 90% of the storage below the lowest spillway crest within fourteen days? ☒ Yes ☐ No
2. Will the single spillway evacuate 75% of the storage between the maximum design high water and the spillway crest within 48 hours? ☐ Yes ☐ No
3. Will the Service Spillway evacuate 75% of the storage between the auxiliary spillway and the Service Spillway crests within seven days? ☒ Yes ☐ No
4. Will the Service Spillway and the Auxiliary Spillway in combination evacuate the storage between the design high water and the auxiliary spillway crest [illegible] ☒ Yes ☐ No

See enclosed hydrology calculations.

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
OFFICE OF ENVIRONMENTAL ANALYSIS
ALBANY, N.Y. 12201

APPLICATION FOR PERMIT
CONSTRUCTION OF EARTH DAM AND APPURTENANCES
ROUND POND CREEK (TRIB. 0-121)

TOWN OF GREECE, N.Y.

DESCRIPTION OF DOWNSTREAM AREA

Situated immediately downstream (north) of the proposed construction on Round Pond Creek (Tributary 0-121) is the Green Acres Subdivision, a 60 lot development of single family homes constructed in the late 1960's. The creek travels along the easterly boundary of this subdivision, crossing Straub Road through a reinforced concrete box culvert.

From here the stream flows northerly parallel to Wood Road, through a residential subdivision. It then turns easterly and then northerly again, crossing Ridge Road (NYS Route 104) and continuing on parallel to Long Pond Road. Once past Maiden Lane, the creek enters a relatively undeveloped area of the Town. The stream bears northeasterly just before crossing Latta Road and continues out into Round Pond and Lake Ontario.

The area between the proposed construction site and Maiden Lane is mostly residential subdivision development, with some commercial areas in the vicinity of Ridge Road. Beyond Maiden Lane the areas adjacent to the creek are, for the most part, undeveloped as yet.

DAM INSPECTION REPORT
(By Visual Inspection)

Dam Number	River Basin	Town	County	Hazard Class	Date & Inspector
40A-4241	W. Ontario	Greece	Monroe	C	7/5/77 [illegible]

Stream = Round Pond Ck Owner = Town of Greece

Type of Construction

- [x] Earth w/Concrete Spillway
- [ ] Earth w/Drop Inlet Pipe
- [ ] Earth w/Stone or Riprap Spillway
- [ ] Concrete
- [ ] Stone
- [ ] Timber
- [ ] Other ______

Use

- [ ] Water Supply
- [ ] Power
- [ ] Recreation - [ ] High Density
- [ ] Fish and Wildlife
- [ ] Farm Pond
- [ ] No Apparent Use-Abandoned
- [x] Flood Control
- [ ] Other ______

Estimated Impoundment Size 0 124 Acres Estimated Height of Dam above Streambed 19 Ft.

Condition of Spillway

- [x] Service satisfactory
- [ ] In need of repair or maintenance
- [x] Auxiliary satisfactory
- [ ] In need of repair or maintenance

Explain: ______

Condition of Non-Overflow Section

- [x] Satisfactory
- [ ] In need of repair or maintenance

Explain: ______

Condition of Mechanical Equipment

- [x] Satisfactory
- [ ] In need of repair or maintenance

Explain: ______

Siltation [ ] High [x] Low

Explain: ______

Remarks: ______

Evaluation (From Visual Inspection)

- [ ] Repairs req'd. beyond normal maint.
- [x] No defects observed beyond normal maint.

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
DAM INSPECTION REPORT
(...nspection)

...unty	Hazard Class	Date & Inspector
...ioe	C	1/5/77 ...

...r = Town of Greece

Use

- [ ] Water Supply
- [ ] Power
- [ ] Recreation - [ ] High Density
- [ ] Fish and Wildlife
- [ ] Farm Pond
- [ ] No Apparent Use-Abandoned
- [x] Flood Control
- [ ] Other ______

- [ ] Stone
- [ ] Timber
- [ ] Other ______

~~Estimated~~ Approx Impoundment Size 0 → 124 Acres ~~Estimated~~ Approx Height of Dam above Streambed 14 Ft.

Condition of Spillway

- [x] Service satisfactory
- [ ] In need of repair or maintenance
- [x] Auxiliary satisfactory
- [ ] In need of repair or maintenance

Explain: ______

Condition of Non-Overflow Section

- [x] Satisfactory
- [ ] In need of repair or maintenance

Explain: ______

Condition of Mechanical Equipment

- [x] Satisfactory
- [ ] In need of repair or maintenance

Explain: ______

Siltation [ ] High [x] Low

Explain:

EMERGENCY SPILLWAY DESIGN

STORMWATER DETENTION BASIN NO. 1

ROUND POND CREEK WATERSHED

DESCHEL DRIVE

TOWN OF GREECE, MONROE COUNTY, NY

MAY 1976

DESIGN CONSIDERATIONS

1. Location - From a review of the topography around the Deschel Drive site and the desire to discharge excess stormwater flows back into the downstream channel, a location was selected on the northwest abutment of the proposed embankment.

2. NYSDEC Requirements - For a Class 'C' structure with a drainage area of 7.38 square miles, the following criteria apply:

Spillway Design Flood	-60% of maximum probable flood
Service Spillway Design Flood	-50 yr. recurrance interval
Minimum Freeboard	-2'

3. Upstream Characteristics - The upstream watershed area consists of 4725 acres (7.38 square miles) of land in various stages of development

and extending into the Towns of Ogden and Gates. Although there are many undersized culverts and storm sewers in this area, they would provide little resistance to flows of the magnitude required for emergency spillway design.

Of particular concern, however, is the New York State Barge Canal which cuts through the watershed. The canal is elevated above the surrounding ground through the area, with three culverts conducting the Round Pond Creek tributaries underneath it. These culverts act as restrictions to excess stream flows, causing temporary ponding immediately upstream of the canal embankment. The locations and descriptions of each culvert follow:

Tributary No.	Approx. USGS Coordinates Latitude	Longitude	Description*
0-121	43°11'03"N	77°43'35"E	4' x 4' Stone Arch
0-121-5	43°11'02"N	77°41'41"E	3.5' x 3.5' RC Arch
0-121-5-1	43°11'01"N	77°42'58"E	4' x 3' Stone Arch

*From Monroe County Drainage Study, Stage 1

A review of the situation determined that there are no plans for the NYSDOT to enlarge or replace these culverts under the canal. Further, the Town of Greece has adopted

drainage regulations which effectively would prohibit larger discharges from upstream of the canal area. These flow restrictions were, therefore, taken into consideration in determining theoretical flows for design of the emergency spillway.

FLOW CALCULATIONS

1. From Upstream of Canal Area - Restrictions at the canal were assumed to be operating under inlet control conditions. The maximum headwater depth possible was used in calculating discharge through each of the culverts. This was then considered as a constant rate and additive to any downstream flow rates.

2. Area between Canal and Proposed Project - An analysis of soil types, vegetative cover, Town Zoning policies and topography was considered in arriving at a reasonable curve number (CN) for input into the SCS Hydrograph computations. The resulting maximum flow calculated was added to the "point discharges" from the canal to determine a maximum flow to the project site.

SPILLWAY SIZING

1. U.D. Flood Routing - The Upper Darby method of flood routing was used to determine spillway capacities and sizing, taking into consideration the additional storage created by building up a "head" over the spillway crest.

   The calculations indicated excessive velocities at design flow for the soils involved. Due to the erodible nature of the soil and the desire not to decrease the amount of protection afforded by the basin, a concrete gravity emergency spillway was selected to handle the design flow.

EMERGENCY SPILLWAY

DESIGN DATA SHEETS

CURVE NUMBER DETERMINATION

(Area Downstream of Barge Canal)

Soil Group	% Within Area	Avg. CN under Full Development Conditions
A	0 %	--
B	41 %	65
C	17 %	77
D	42 %	84
	Total Average CN	75

However, these numbers do not reflect Town policy towards stormwater detention and drainage. Town regulations require that development contribute no more runoff than that under agricultural conditions, or the existing land conditions prior to development When this factor is taken into consideration, the CN is reduced to approximately 70. For calculations concerning this area, then, we will use a Curve Number = 70.

DISCHARGE CALCULATIONS

A. NYS Barge Canal Culverts

Tributary No.	Type	Max. HW	Q/b	Q
0-121	4' x 4' Stone Arch	11.4'	30 cfs	120 cfs
0-121-5	3.5' x 3.5' R.C. Arch	13.5'	35 cfs	122 cfs
0-121-5-1	4' x 3' Stone Arch	13.8'	35 cfs	140 cfs
	Total discharge to downstream area			382 cfs

B. Downstream Area

from Hydrograph comps

60% x 8900 cfs = 5340 cfs

C. Combined Flow

A + B = 382 + 5340 = 5722 cfs

REV. (2-66)

DATE DEC. 11, 1975
COMPUTED BY WRV
CHECKED BY

MPF HYDROGRAPH COMPUTATION
(AREA DOWNSTREAM FROM CANAL)

WATERSHED OR PROJECT ROUND POND CREEK
S.W. DETENTION BASIN No. 1

STATE N.Y.

STRUCTURE SITE OR SUBAREA DESCHEL DRIVE

DR. AREA 1.84 SQ. MI. STRUCTURE CLASS C

T_c 1.47 HR. STORM DURATION 6 HR.

POINT RAINFALL 23 IN.

ADJUSTED RAINFALL:

AREAL : FACTOR 1.0 IN. 23

DURATION : FACTOR 1.0 IN. 23

RUNOFF CURVE NO. 70

Q 18.5 IN.

HYDROGRAPH FAMILY NO. 1

COMPUTED T_p 1.03 HR.

T_o 5.5 HR.

(T_o / T_p):

COMPUTED 5.34 ; USED 6

REVISED T_p 0.92

$q_p = \frac{484A}{\text{REV. } T_p}$ = 968 CFS.

$(Q)(q_p)$ = 17,908 CFS.

t(COLUMN) = (t / T_p) REV. T_p q(COLUMN) = $(q_c / q_p)(Q)(q_p)$

Q(COLUMN) = $(Q_t / Q)Q$

	$t=(t/T_p)$Rev. T_p	$q=(q_c/q_p)(Q)(q_p)$	$Q_t=(Q_t/Q)Q$
	t HOURS	q CFS	Q INCHES
1	0	0	0
2	.44	54	.0185
3	.98	322	.056
4	1.32	734	.22
5	1.76	1504	.59
6	2.20	3152	1.37
7	2.64	6912	3.05
8	3.08	8900	5.72
9	3.52	7700	8.49
10	3.96	5999	10.8
11	4.40	4620	12.6
12	4.84	3617	13.9
13	5.28	2937	15.0
14	5.72	2489	15.9
15	6.16	2221	16.7
16	6.60	1791	17.4
17	7.04	1074	17.9
18	7.48	501	18.2
19	7.92	322	18.3
20	8.36	161	18.4
21	8.80	90	18.4
22	9.24	54	18.5
23	9.68	36	18.5
24	10.12	18	18.5
25	10.56	0	18.5
26			
27			
28			
29			
30			
31			
32			
33			
34			

U.S. METHOD OF RESERVOIR FLOOD ROUTING

State N.Y. Watershed ROUND POND CREEK Site DESCHEL DRIVE

Class ______ V_{us} = ______ AF V_{ub} = ______ AF V_{ud} = ______ AF V_{u} = ______ AF

Storm FREEBOARD (MPF) D.A. 1.84 mi² Runoff 18.5 in Q_I = 5740 cfs

Hydrograph Family 1 T_c/T_p 6 V_I = 53.33 x Runoff x D.A. = 1815 AF

Q ______ cfs E_h = ______ ft V_s ______ AF ______ = ______

Q/Q_I = ______ V_s = ______ AF V_s ______ ______ = ______

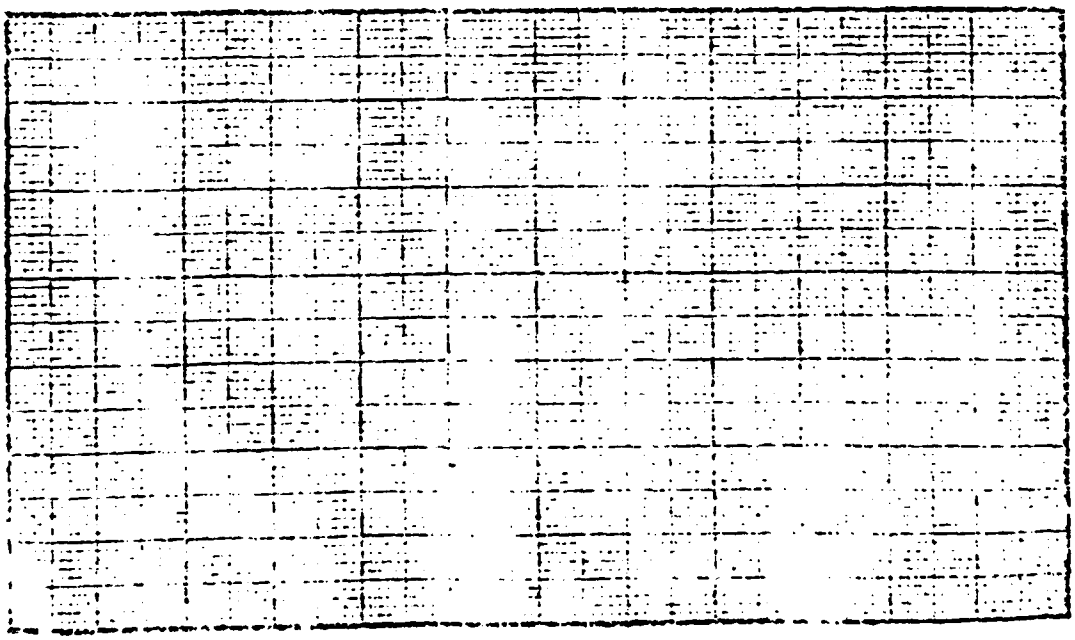
E_p = 458.0 ______ 3 ______ 200 ______ V_{sp}/V_I = 0.248

V ______ AF Case 2 ______ = 1 % $(V_{sp}/V_I + V_{p2}/V_I)$ = ______

______ 450. AF Q_n 45 cfs V'_{sp}/V_I = $\boxed{0.26}$

______ = 50 cfs Q_n/Q_I = 0.008 V_{op}/V_I = 0.012

1	2	3	4	5	6	7	8	9	10	11	12
E_w ft	V_{Iw} AF	V_{sw} AF	V_{sw}/V_I	V'_{sw}/V_I	Q_o/Q_I	Q_o cfs	O_e cfs	H_p ft	Q_e/b	b ft	v fps
459		540	0.298	0.310	0.93	5338	5288	1.0	1.90	2783	3.8
460		652	0.359	0.371	0.80	4592	4542	2.0	6.22	730	5.8
461		772	0.425	0.437	0.66	3788	$\boxed{3738}$	3.0	12.7	294	7.4
462		900	0.496	0.508	0.54	3100	3050	4.0	21.1	145	8.8



EMERGENCY SPILLWAY & EXIT CHANNEL CALCULATIONS

1. From U.D. Flood Routing Chart, Q_E = 3738 cfs, where Q_E is a routed discharge; ie, it takes into account additional storage available when the 'head' over the crest of the spillway builds up.

$Q = CLH^{3/2}$ for broad-crested weirs,

$C \approx 3.25$ to 3.35

$\therefore$ use $C = 3.30$

$H = 3.0'$

$L =$ ___

$\therefore 3738 = 3.30 \times L \times (3)^{3/2}$

$= 17.15L$

$217.9' = L$

$\therefore$ make spillway 218' long.

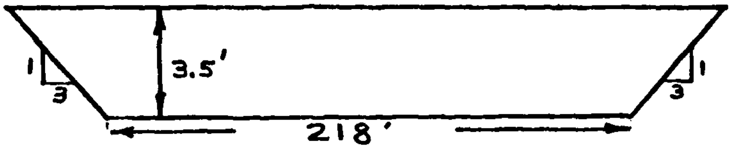
2. If tailwater depth in exit channel exceeds top of spillway crest: $Q = CLH^{3/2}$ would not be valid. Therefore, make exit channel such that this does not occur.

AD-A105 726 STETSON-DALE UTICA NY F/G 13/13
NATIONAL DAM SAFETY PROGRAM. ROUND POND CREEK DAM (INVENTORY NU--ETC(U)
JUN 81 J B STETSON DACW51-81-C-0009
UNCLASSIFIED NL

2 OF 2
AD
A105726

END
DATE
FILMED
11 81
DTIC

Assume a depth in exit channel = 3.5'



$$Q = AV = A \times \frac{1.49}{n} R^{2/3} S^{1/2}$$

$$= 800 \times \frac{1.49}{.04} \times 2.23 \times .0548$$

$$= 3641 \text{ cfs}$$

A	=	800
WP	=	240
R	=	3.33
$R^{2/3}$	=	2.23
S	=	.0030
$S^{1/2}$	=	.0548
n	=	0.04

∴ depth in exit channel will be slightly greater than 3.5', say 3.6'.

∴ The tailwater height will not exceed the spillway crest elevation, and will not affect the performance of the spillway itself.

Velocity in exit channel

$V = \frac{1.49}{n} R^{2/3} S^{1/2} = 4.55$ fps → this is a marginal allowable velocity for these soils. However, for lesser flows, the velocity will also decrease; therefore, this appears satisfactory.

L. Comara/S. Zoccola - Environ. Analysis
W. Righter/G. Koch - FACM
Round Pond Creek (Town of Greece) Appl. No. 828-76-140

June 23, 1976

We have reviewed the Hydrology and Hydraulics for the proposed structure and have the following comments:

Emergency Spillway (Sheet 11 of 26)

In Section C-C the top of the wall should be raised so that it is at the same elevation as the top of dam (Elev. 463.0).

Discharge Structure Outlet (Sheet 9 of 26)

The cut-off wall should be located at the downstream end of the energy dissipator.

I have discussed these two comments with William Van Alst of Larsen Engineers. The above revisions will be covered by change order. We will receive a copy of the revised plans.

WR:GK:bt

PRELIMINARY

ENGINEERING REPORT

ROUND POND

WATERSHED

RETENTION BASIN NO. I

DESCHEL DRIVE

A Recommended Facility
under the
Town of Greece Natural Stream
Improvement and Protection
Implementation Program
(I.P.I.P.)

TOWN OF GREECE
MONROE COUNTY, NEW YORK

MARCH 1975

WILLIAM C. LARSEN, P. E.
Civil-Sanitary-Municipal
E N G I N E E R I N G
44 Saginaw Drive - Rochester, N.Y. 14623

TABLE OF CONTENTS

PRECIS

Round Pond Creek frequently overtops its banks and causes severe flooding problems, particularly in the Wood Road area and environs. Additionally, the peak rates of runoff contribute to channel-bank erosion with subsequent loss of land, siltation of streams (thereby reducing the hydraulic capacity) and accelerated filling of wetlands and marshlands in the Round Pond area, destroying the ecosystem of these valuable environmental assets.

Because of the magnitude of peak flows and the fact that considerable building has already take.. place in the watershed it is recommended that an "on-stream" stormwater detention basin be built in the open land south of Deschel Drive, utilizing the natural stream valley topography for temporary storage. This area can then be left in a "forever-wild" state or developed gradually for informal recreation. No stripping of ground cover, or alteration of the land, in the basin area is contemplated or recommended.

The total cost of the facility, including land, is anticipated to be approximately $630,000 of which the major portion is for land acquisition. Since the land-use can be multi-purpose we urge the Town to investigate the possibility of Federal funding under the Bureau of Outdoor Recreation Grant Program or under the State of New York Wetlands Preservation Program.

I GENERAL BACKGROUND

The Round Pond Watershed is located in the central portion of the Town of Greece and is characterized by moderate development within its limits. Round Pond Creek is the westernmost and largest of the three major drainageways serving the watershed area.

Flooding and flood-related erosion problems have plagued residents along Round Pond Creek during periods of heavy rainfall and/or snow-melt conditions. The most severe conditions occur in the developed area along the creek between Deschel Drive on the south and the Wegman "Ridgemont Plaza" property on the north. Included in this area are residents of Deschel Drive, Round Creek Drive, Cherry Creek Lane, Straub Road, and Wood Road. Similar flooding problems on Medallion Drive, Medallion Circle and Mandarin Drive are caused by storm water backup due to high water levels in Round Pond Creek.

This office became aware of these problems during the preparation of the Townwide Drainage Study

completed in July, 1974. The seriousness of the problem was clearly evident during the heavy rainfall and resulting flooding of May 17, 1974.

When the Town Board solicited citizen input for the Townwide Drainage Study, nearly 30% of all comments within the entire Round Pond Watershed came from the above-described area.

Consistent with the recommendations of the Townwide Drainage Study, the Town Board on Jan. 21, 1975 authorized this office to perform Engineering services to "size" and determine preliminarily the cost of stormwater detention facilities to be located south of Deschel Drive. While the overall solution to the problems includes remedial channel work along Wood Road and additional detention facilities to the west, it is felt that the subject facility south of Deschel Drive would be the first and most significant step in a phased program to alleviate the present day flooding and erosion problems along this tributary.

II UPLAND CHARACTERISTICS

The proposed impoundment site receives stormwater runoff from approximately 4725 upland acres, 1721 of those acres being outside the limits of the Town of Greece.

While moderate development characterizes the area which itself experiences the flooding problems, the upland area southerly to the Barge Canal is generally open land. Developed land is more prevalent south of the Canal and into the Town of Gates.

The main channel in the upland area is well-defined and generally free-flowing. However, flow of surface runoff is somewhat restricted by three (3) culverts under the Barge Canal and peak rates are reduced by the natural retentive characteristics of the lowlands adjacent to the south bank of the Canal.

Should these restrictions under the Canal be enlarged, peak flows downstream could increase under

certain return frequencies. While it is our understanding that the NYSDOT, as a matter of policy, does not enlarge such facilities, nevertheless provision for such future action should be considered. The hydraulic studies performed for this report in connection with detention pond sizing have taken into account and provided for future enlargement of culverts under the Barge Canal.

III RECOMMENDED SOLUTION

In accordance with the preliminary recommendations made in the Townwide Drainage Study, it is proposed to construct a stormwater detention basin south of Deschel Drive. Maximum allowable outflow, based on the capacity of the existing stream, and local stormwater contributions, would be 20± cfs. Since outflow is a function of the height of water stored, "normal" discharge would be less than 20 cfs. Maximum ponding elevation would be to 459.0 (USGS datum). This would require approximately 120 acres of land acquisition and would provide 490 acre feet

of storage based on the existing topography and assuming no excavation other than that required for dam construction. (Based upon County Planning Dept. 1" = 200' aerial manuscripts) Sizing is such as to provide for a storm recurrance interval of 50 years. Emergency spillway facilities, of course, will be sized for the maximum flow anticipated from this watershed.

IV DISCUSSION OF LAND ACQUISITION

A map showing proposed land acquisition is included in the appendix. Generally it is suggested that the Town purchase land bounded on the north by the dam and on the remaining sides by the 459.0 contour, that being the maximum anticipated flooding elevation.

We have purposefully not recommended purchase of a large regular, rectangular, easily identifiable parcel of land but rather a very irregular, random shaped parcel. It is felt that the benefit derived

from such an acquisition is greater than the benefit from simply taking a large rectangular parcel including much unneeded land.

First of all, the random shape of the proposed area actually invites innovative planning for the development of the surrounding adjacent lands. Second, it allows the bordering lands to remain privately owned. This, we feel, is proper since the "forever-wild" condition of the proposed facility may very well cause the surrounding land to be a prime development area.

In an effort to control flood damage and to preserve environmentally sensitive areas, the Town has adopted standards to prohibit development in flood-prone and otherwise environmentally sensitive areas. This existing ordinance coupled with this office's proposal to create multi-purpose corridors along all the Town's drainageways would seem to indicate that much of the land proposed to be acquired is of little monetary value for development purposes.

V COMPATIBILITY OF SOLUTION WITH TOWNWIDE DRAINAGE STUDY

This project coupled with the proposed Larkin Creek stormwater retention facility constitute the two highest priority recommendations of the Natural Stream Improvement and Protection Implementation Program as recommended in the Townwide Drainage Study. The reader is directed to the following portions of that study to examine the original comments relative to this project:

Section one - page 35 relative to retention basins

Section two - page 195 and 200 relative to the Deschel Drive - Wood Road problems

Section three - relative to the Implementation of the Natural Stream Improvement and Protection Program.

Summarizing, the Drainage Study recommends the use of retention basins as a solution to present drainage and flooding problems and particularly recommends

one to be located south of Deschel Drive. This more detailed study sees no reason to modify or change those original recommendations.

We conclude, therefore, that the recommendations made herein are in fact consistent with the goals and recommendations of the original Master Drainage Plan.

VI OTHER CONSIDERATIONS

While the facilities proposed herein are intended to alleviate present flooding and flood-related problems, pressures for development in the upland areas will continue. If measures are not taken to require adequately sized drainage facilities for these developments a completely new series of drainage-related problems could be created. Furthermore, large parcels of undeveloped land may not then be available for on-stream stormwater retention. The need for a continuing program of drainage control cannot be over-emphasized.

This office has considered, and does still consider, the solution of problems in the subject area to be solved as a result of more than one capital improvement project. That is, while a retention basin south of Deschel Drive will undoubtedly provide substantial relief from the present problems, it is really only a part of the overall solution to the problem. Additional retention facilities were originally recommended for the area north of Mandarin Drive and may yet be required for a full solution. In addition, remedial channel work is required along Wood Road to prevent further bank erosion and sloughing with resulting loss of land. Although the new retention basin will substantially reduce the present day erosive velocity in the stream, the unstable banks will continue to erode until such time as they are stabilized by either flattening the slopes or installing some type of retaining wall structure.

VII COST ESTIMATE

Anticipated capital costs are shown in the attached appendix.

VIII SCHEDULING

A recommended Development Schedule is included as an appendix.

A P P E N D I C E S

ENGINEER'S ESTIMATE *

RETENTION POND & DISCHARGE STRUCTURE
TO BE LOCATED SOUTH OF DESCHEL DRIVE

Lump Sum	Clearing & Grubbing		$37,500
16,500 CY	Berm Construction	@ 4.50/CY	74,250
Lump Sum	Discharge Control Structure		18,000
Lump Sum	Emergency Spillway and Channel		35,000
Lump Sum	Seepage Control Facilities		30,250
Lump Sum	Restoration, Grading & Seeding		15,000
	Total Construction Cost		$210,000
	Plus 10% Contingent		21,000
	Plus 18% legal, admin., Eng., survey inspection		39,000
	TOTAL ESTIMATED COST		$270,000

* This cost estimate does not include any allowance for land acquisition.

Preparation of Preliminary Engineering Report by Consulting Engineer

Review by Town Engineer, Town Board, and Conservation Commission

Report by Finance Committee and Town Attorney relative to financing under Town-wide Drainage District or otherwise

Creation of Town-wide Drainage District including advertisement, public hearings, approval of financing, and establishment of District

Authorization to undertake detailed engineering, preparation of plans and specifications
- Land Acquisition Negotiations
- Detailed engineering, plans & specs

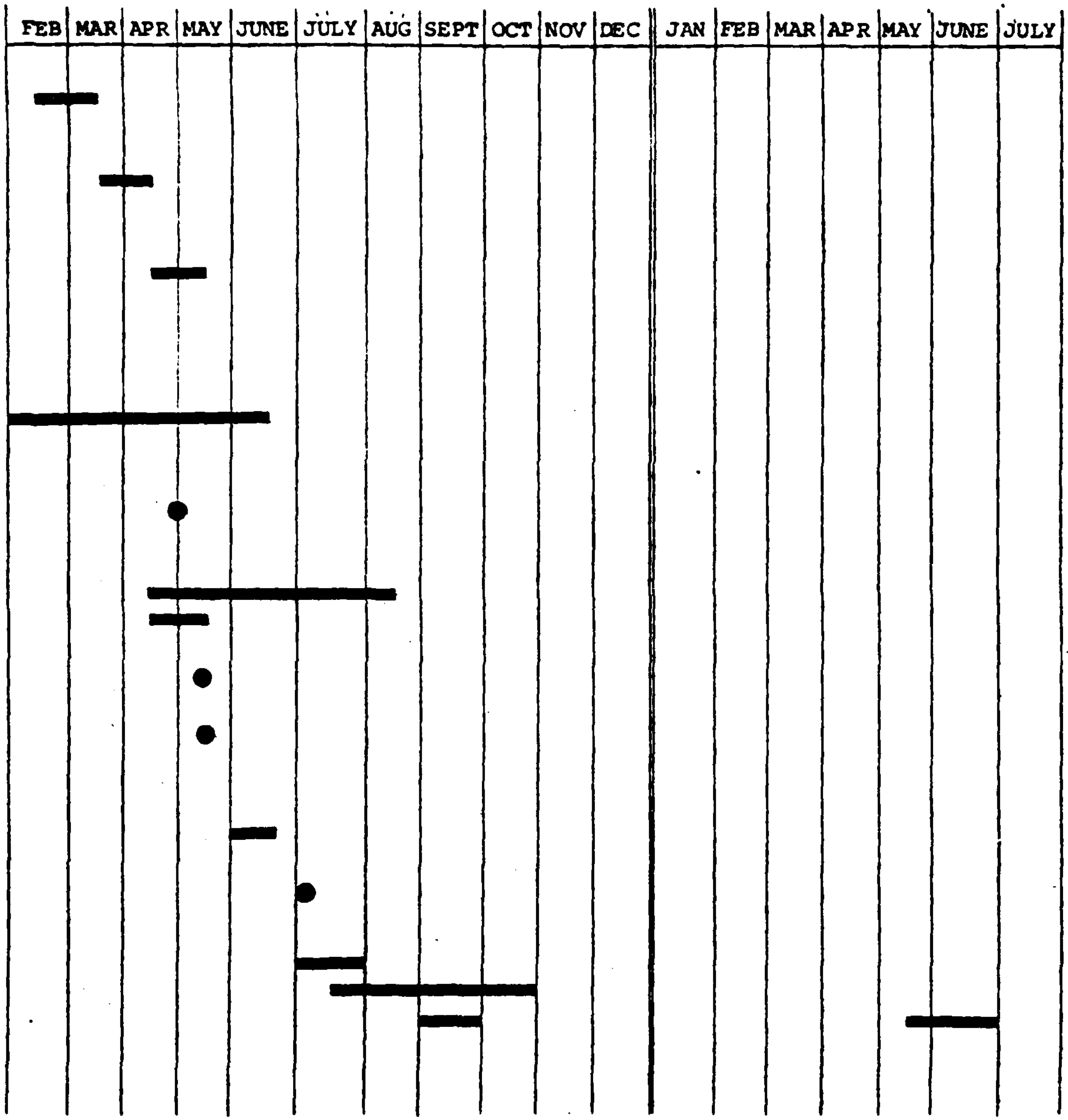
Submittal to Town Board

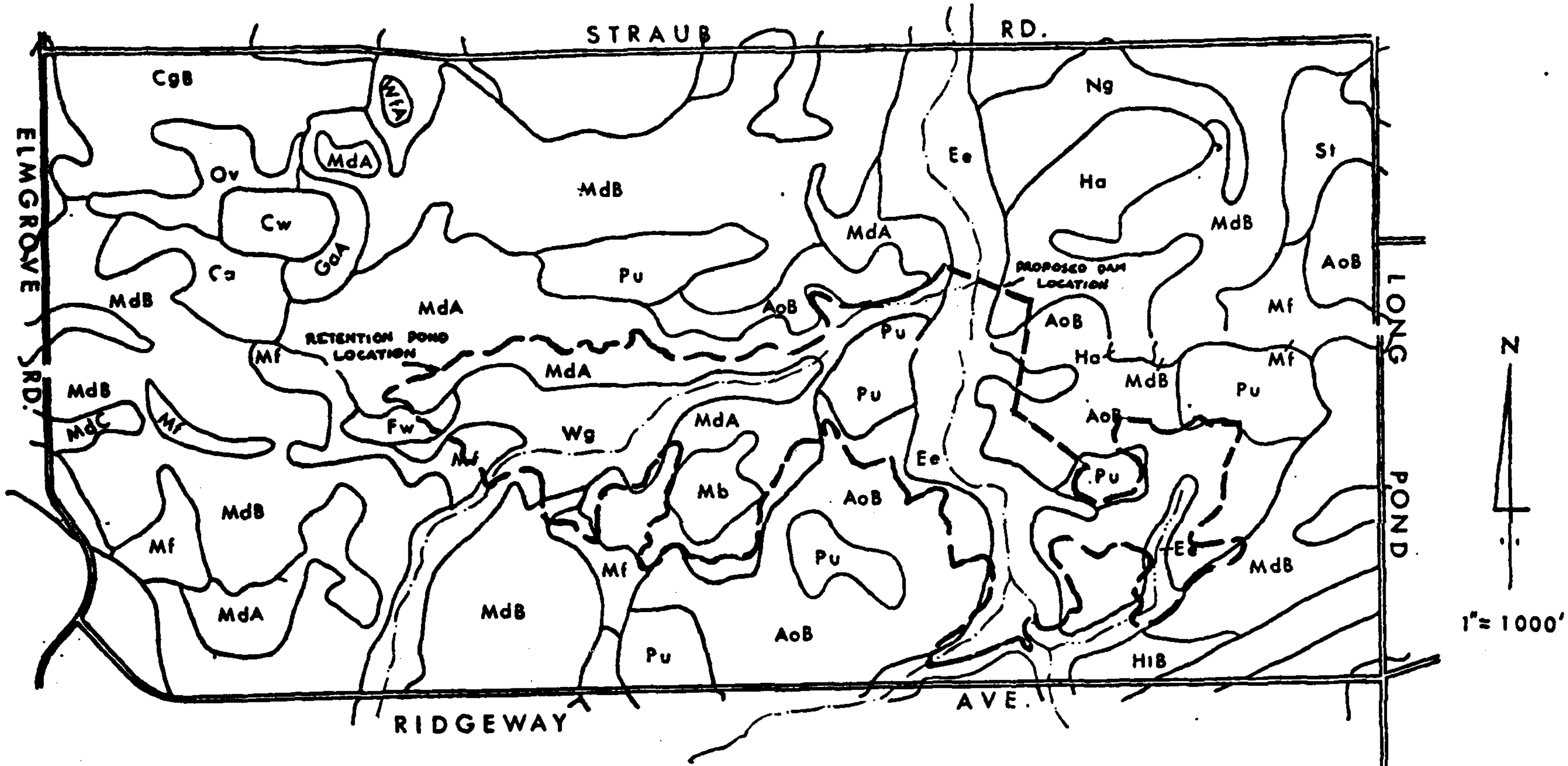
Submittal to DEC for approval under Section 429(c) of the Conservation Law

Advertise for Bids

Award Contract

Construct
- Clearing and Grubbing
- Earthwork and structures
- Seeding & Site Restoration




STRAUB RD.
ELMGROVE RD.
RIDGEWAY AVE.
LONG POND
N
1"= 1000'
PROPOSED DAM LOCATION
RETENTION POND LOCATION
CgB
WfA
MdA
Ov
Cw
GaA
Ca
MdB
Mf
MdC
Fw
Wg
Mb
Pu
AoB
Ee
Ng
Ha
St
HlB

SOILS MAP

SOIL TYPES

Symbol	Description
AoB	Alten Gravelly Loam, 3-4 percent slopes Variable bearing capacity; rapid permeability; well drained in most places
Ca	Canandaigua Silt Loam High water table; sand lenses subject to seepage, fair to poor stability; subject to piping
CgB	Cazenovia Gravelly Loam, 3-8 percent slopes poor top soil, seasonal high water table, slow permeability
Cw	Cut and Fill Land Variably sloped, consists of areas where at least 3 feet of soil material has been removed and used as fill for construction projects; remaining soil is predominantly loamy.
Ee	EEl Silt Loam Seasonal high water table; subject to flooding, fair to poor stability, highly erodible silty material subject to piping.
Fw	Fresh Water Marsh Water on or near the surface; variable soil materials
EaA	Galen Very Find Sandy Loam, 0-2 percent slopes Seasonal high water table, poor stability, subject to piping in fine sands; underlain in places by wet, compressible material.
Ha	Halsey Gravelly Loam Prolonged high water table; adequate foundation strength, rapid permeability; good stability.
Mb	Made Land Areas filled with waste; variable soil materials

Symbol	Description
Mda	Madrid Fine Sandy Loam, 0-3 Percent Slopes Moderate-high bearing capacity; seasonal high water table; rapid permeability
MdB & MdC	Same as MdA (above), except gently undulating slopes in MdB; steeper slopes and gravel pockets in MdC.
Me	Massena Fine Sandy Loam Good fill material; seasonal high water table; moderate bearing capacity, rapid permeability, some stones
Ov	Ovid Silt Loam Seasonal high water table; high bearing capacity; moderate permeability; good stability and shear strength
Pu	Pits and Quarries Excavated areas; soil materials are variable
Ng	Niagara Silt Loam Adequate strength for low embankments, poor permeability, silt and fine sand subject to piping in embankments; seasonal high water table.
St	Sun Loam, moderately shallow variant Prolonged high water table, cut slopes unstable; shallow limestone bedrock
Wg	Wayland Silt Loam Prolong high water table; subject to frequent flooding; poorly drained.

STORAGE REQUIREMENT DATA

Criteria:

1. Design Recurrance Interval = 50 years
2. Runoff Coefficient of Imperviousness = 40%
3. Acreage of Watershed = 4725 Acres
4. Allowable Outflow = 20 cfs

Method of Storage Determination:

Analytical Method (Calculus) as developed by Glen Yrjanainen and Alan W. Warren - Oakland County, Michigan, Engineering Dept.

$I_{so} = \frac{200}{T + 25}$ rainfall intensity, Monroe County

Q_o = Maximum outflow per acre - imperviousness

V_n = Volume of inflow (ft^3/Ac)

V_o = Volume of outflow (ft^3/Ac)

V_s = Maximum storage Volume required per acre- imperviousness

V_t = Maximum storage volume required (ft^3)

$$Q_o = \frac{20 \text{ cfs}}{4725 \text{ Ac} \times 0.40} \doteq 0.011 \text{ cfs/Acre-imperviousness}$$

$$V_n = V_n = \frac{200}{T + 25} \times T \times 60 = \frac{12000T}{T + 25}$$

$$V_o = 40\, Q_o T = 40 \times 0.011 \times T = 0.44T$$

$$V_s = V_n - V_o = \frac{12000T}{T + 25} - 0.44T = 11{,}284 \text{ ft}^3 \text{ /Acre-imperviousness}$$

$$V_t = V_s \times A_{xc} = 21{,}326{,}710 \text{ ft}^3 = 490 \text{ Acre-feet}$$

NEW YORK STATE
DEPARTMENT OF TRANSPORTATION
Raymond T. Schuler, Commissioner

Region 4 Office: 1530 Jefferson Road, Rochester, New York 14623

March 4, 1975

RECEIVED
MAR 5 1975
WM. C. LARSEN, P.E.

William Larsen
44 Saginaw Drive
Rochester, New York 14623

Attention: Wm. Van Alst

Dear Mr. Van Alst:

This letter is written to confirm our discussion this morning relative to our drainage policy along the Canal. When the Canal was constructed, the culverts under the Canal were designed to satisfactorily accommodate the storm drainage at that time. As you know the towns have the responsibility and capability to regulate development and drainage in their respective townships. If it should become necessary to increase the capacity of a culvert under the Canal the New York State Department of Transportation, upon receiving appropriate engineering drawings and specifications, will issue a permit so that the town may enlarge any culvert.

If you have any more questions on this matter, please do not hesitate to contact this office.

Very truly yours,

A. J. Kopczynski
Regional Director of Transportation

By: C K Burkwit
C. K. Burkwit
Regional Waterways Maint. Engineer

AJK:CKB:ja

EXPLORATION AND TESTING (CON'T.)

locations in the emergency spillway were established by your office. All test pits were excavated under our full-time supervision. Samples were taken back to our laboratory for testing. Test pit locations are shown on Figure 1, following this page. Test pit logs are enclosed in Appendix B.

The testing program was set up to determine soil types and the suitability of the onsite material for embankment fill, and consisted of grain size analyses and natural moisture content determinations. Test data are enclosed in Appendix A.

SOIL AND ROCK CONDITIONS

Topsoil thickness, except for a few bare spots, varies from 4 to 18 inches, but is commonly less than 12 inches. Underlying the topsoil are, in order: fill, stratified silty sands and gravels, glacial till and bedrock. All materials were not encountered everywhere.

Fill between Sta. 21+50 and 26+50 was apparently placed to provide tractor access across a wet area. The fill is a mixture of topsoil and silty sands. An isolated pocket of organic fill was encountered in Test Pit TH-5.

The thickness of the stratified silty sands and gravels exceeds test pit depths at the north abutment, south of Sta. 20+00 on the dam centerline, and in the borrow areas.

SOIL AND ROCK CONDITIONS (CON'T.)

The deposits are generally red-brown in color and medium dense. The individual strata vary in extent and composition, and range from silt and sand through silty sand and gravel to relatively clean gravel with little or no fines. Silty sands are most common. Gravel layers were usually less than a foot thick.

Glacial till was within test pit depth only between Sta. 2+00 and 20+00 and at the east end of the emergency spillway. The till is a dense, red, unsorted deposit of silt, sand and gravel, with a trace of clay. Pockets with proportionally more or less of each constituent material may be encountered.

Bedrock between Round Pond Creek and Sta. 9+00 is mostly Grimsby Sandstone. Its surface is moderately weathered. The softer Queenston Shale in the deepest test pit (TH-17) confirmed the contact of the two formations.

Soil and rock profiles are shown on Figure 2, following this page.

Several of the test pits were dry. Groundwater elevations varied between 447 and 451. Groundwater levels near the creek are controlled by the creek level. Note that groundwater levels were recorded in September and November, after a dry fall. Levels will

SOIL AND ROCK CONDITIONS (CON'T.)

probably rise one or two feet through the winter season. South of Sta. 20+00 ground surfaces were wet, in spots, at the time of our investigation, despite the dry fall.

DESIGN RECOMMENDATIONS

General

We recommend that the dam be constructed as a homogeneous compacted earth fill dam with upstream and downstream slopes of 3 on 1. The crest should be at least 12 feet wide. Earth available on site can be used for embankment fill provided strict control of material quality and placement is excercised. (See Field Control and Testing.)

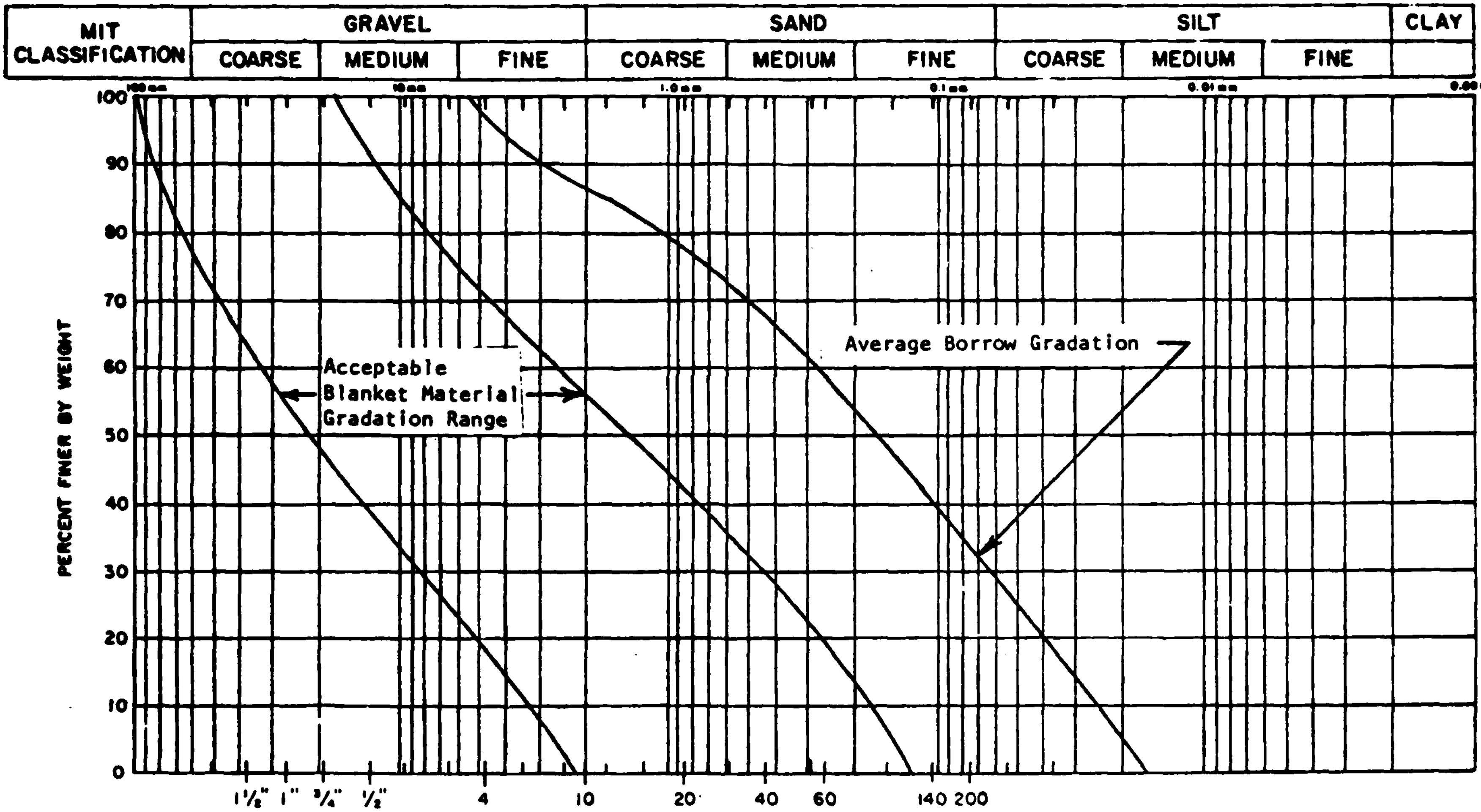
The slopes are flatter than those normally recommended for the onsite materials.[1] However, the variability of our borrow necessitates use of some materials only maginally acceptable as fill for homogeneous fill dam construction. The flatter slopes are recommended to lengthen seepage paths, maintain dam stability and reduce surface erosion.

---

[1]United States Department of the Interior, Design of Small Dams, 1st. ed., United States Government Printing Office, Washington, D.C., 1965, p.199

GRAIN SIZE DISTRIBUTION

PROJECT DES RET P. 2331.00
BORING No. ______ SAMPLE No. ______ TEST BY ______ REMARKS Drainage Blanket Material SHEET No. 1 OF 1
SAMPLE DEPTH ______ DATE ______



Form No. 14-70

Blanket Gradation
JAMES R COLLINS & ASSOCIATES INC.
CONSULTING SOILS AND FOUNDATION ENGINEERS
Figure 3

TOWN of GREECE
2505 RIDGE ROAD WEST
ROCHESTER, NEW YORK, 14626 • 716-225-2000

March 23, 1981

F.W. Byszewski, P.E.,L.S.
Stetson-Dale
185 Genesee Street
Utica, New York 13501

ATTN: Jerry Gomez

RE: Corps of Engineers
Dam Safety Inspections

Gentlemen:

Enclosed, per your request, please find the following information pertaining to the operation, maintenance and performance of two manually-controlled stormwater detention basins located in the Town of Greece:

1) Peak stage elevations and date of occurence
2) Sample copies of operation records
3) Buck Pond Detailed Drainage Study, Page 83

We are presently revising our Stage-Storage Curve for the Deschel Drive basin to correct the drafting errors which you brought to our attention.

We were unsuccessful in obtaining photographs of either detention basin in a partially-filled condition this spring.

Please contact me if you have additional questions or comments on this matter.

Very truly yours,

James S. Peet

James S. Peet, P.E.
Town Engineer

Encl.

Peak Stage Elevations at Round Pond Creek Detention Basin
(Deschel Drive)

Date	Time	Stage (USGS Elev.)	Control Gate Opening
3-9-77	9:00 A.M.	454.77	0.98' opened to 1.12'
3-10-77	9:00 A.M.	454.05	1.12' unchanged
	4:15 P.M.	453.81	1.12' unchanged
3-11-77	12:00 Noon	453.40	1.12' unchanged
12-15-77	2:30 P.M.	456.0±	1.00' unchanged
12-19-77	2:15 P.M.	457.0±	1.00' "
	4:00 P.M.	457.0±	1.00'opened to 1.10'
12-20-77	11:00 A.M.	Unknown	1.10'opened to 1.20'
	1:00 P.M.	"	1.20'opened to 1.30'
12-21-77	3:00 P.M.	"	1.30' unchanged
12-30-77	4:15 P.M.	449±	1.30' closed to 1.0'
3-22-78	5:30 P.M.	456.0±	1.0' opened to 1.15'
3-23-78	9:00 A.M.	457.0±	1.15' opened to 1.35'
3-24-78	10:30 A.M.	457.2±	1.35' unchanged
3-25-78	7:30 P.M.	456.2±	1.35' unchanged
3-27-78	9:30 A.M.	454.0±	1.35' unchanged
3-31-78	4:00 P.M.	449 ±	1.35' closed to 1.15'
2-17-81	10:30 A.M.	451.5	1.45' unchanged
2-19-81	12:00 Noon	449-	1.45' "
2-20-81	11:30 A.M.	453.3	1.45' "
2-21-81	12:00 Noon	454.8	1.45' "
2-25-81	2:00 P.M.	451.0	1.45' "

Note: Gage Post Installed and marked in January, 1979.
Service Spillway is 48" dia. RCP with manually operated sluice gate.
Downstream channel capacity limited during 1977-1978 by construction of North-South Interceptor Sewer.

DESCHEL DRIVE DETENTION BASIN
INSPECTION
CHECK LIST

DATE: 2/9/91

TIME: [illegible]

INSPECTED BY: B. Johnson

ITEMS TO BE CHECKED

1) GATE AND LOCK AT CHERRY CREEK LANE:

O.k.

2) GATE AND LOCK AT RIDGEWAY AVENUE:

o.k.

3) GATE AND LOCK AT CONTROL STRUCTURE:

Still damaged

4) OPENING HEIGHT OF CONTROL GATE:

EXISTING HEIGHT: 1.45'

CHANGED TO:

5) COMMENTS:

DESCHEL DRIVE DETENTION BASIN
INSPECTION
CHECK LIST

DATE: 3/16/81

TIME: 2:00

INSPECTED BY: R. Yshowyman

ITEMS TO BE CHECKED

1) GATE AND LOCK AT CHERRY CREEK LANE:

O.K.

2) GATE AND LOCK AT RIDGEWAY AVENUE:

O.K.

3) GATE AND LOCK AT CONTROL STRUCTURE:

O.K.

4) OPENING HEIGHT OF CONTROL GATE:

EXISTING HEIGHT: CHANGED TO:

5) COMMENTS:

DESCHEL DRIVE DETENTION BASIN
INSPECTION
CHECK LIST

DATE: 11/18/80

TIME: 11:15

INSPECTED BY: B.J.

ITEMS TO BE CHECKED

1) GATE AND LOCK AT CHERRY CREEK LANE:

O.K.

2) GATE AND LOCK AT RIDGEWAY AVENUE:

O.K

3) GATE AND LOCK AT CONTROL STRUCTURE:

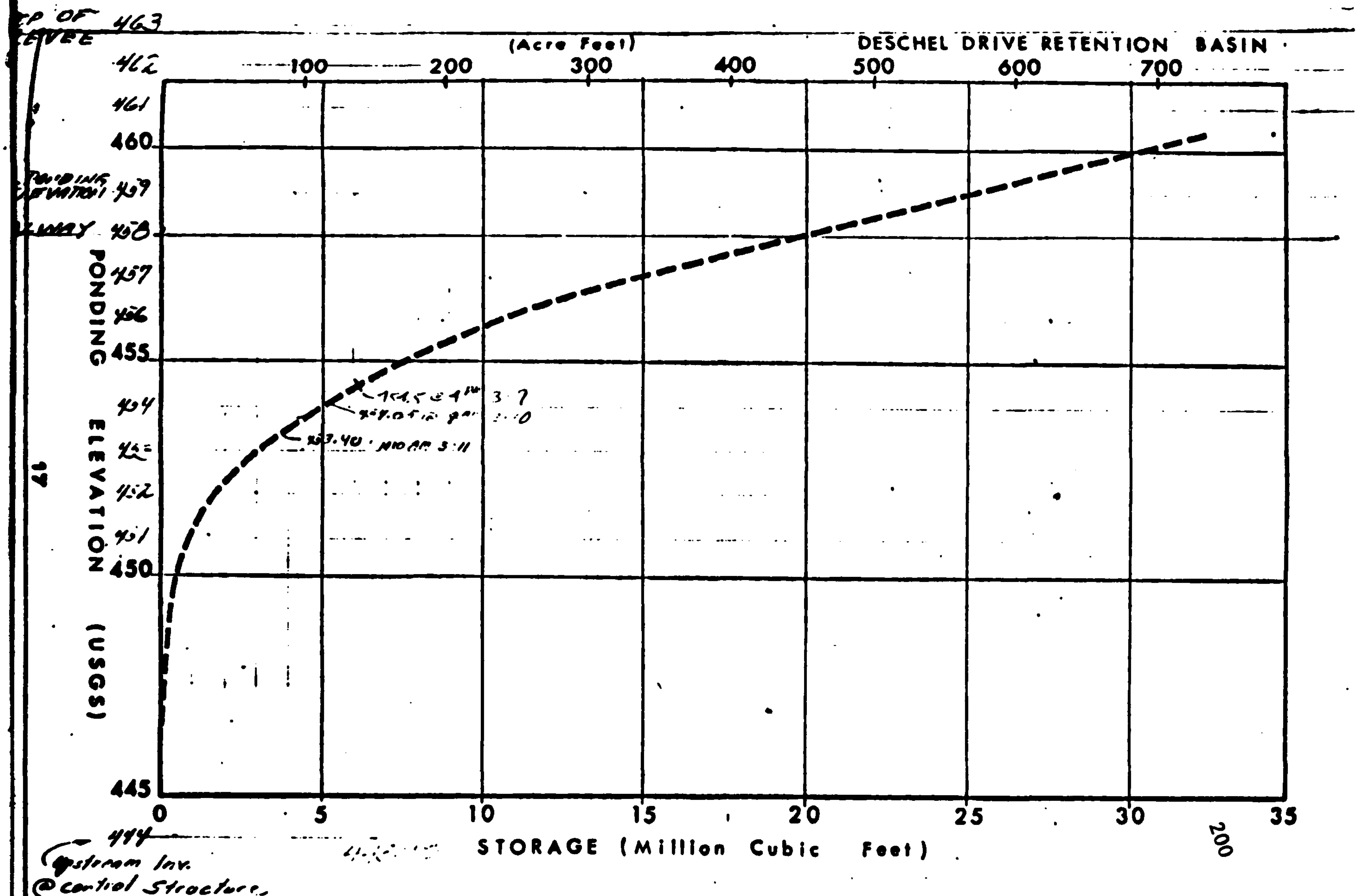
O.K.

4) OPENING HEIGHT OF CONTROL GATE:

EXISTING HEIGHT: 1.45'

CHANGED TO: ________

5) COMMENTS:



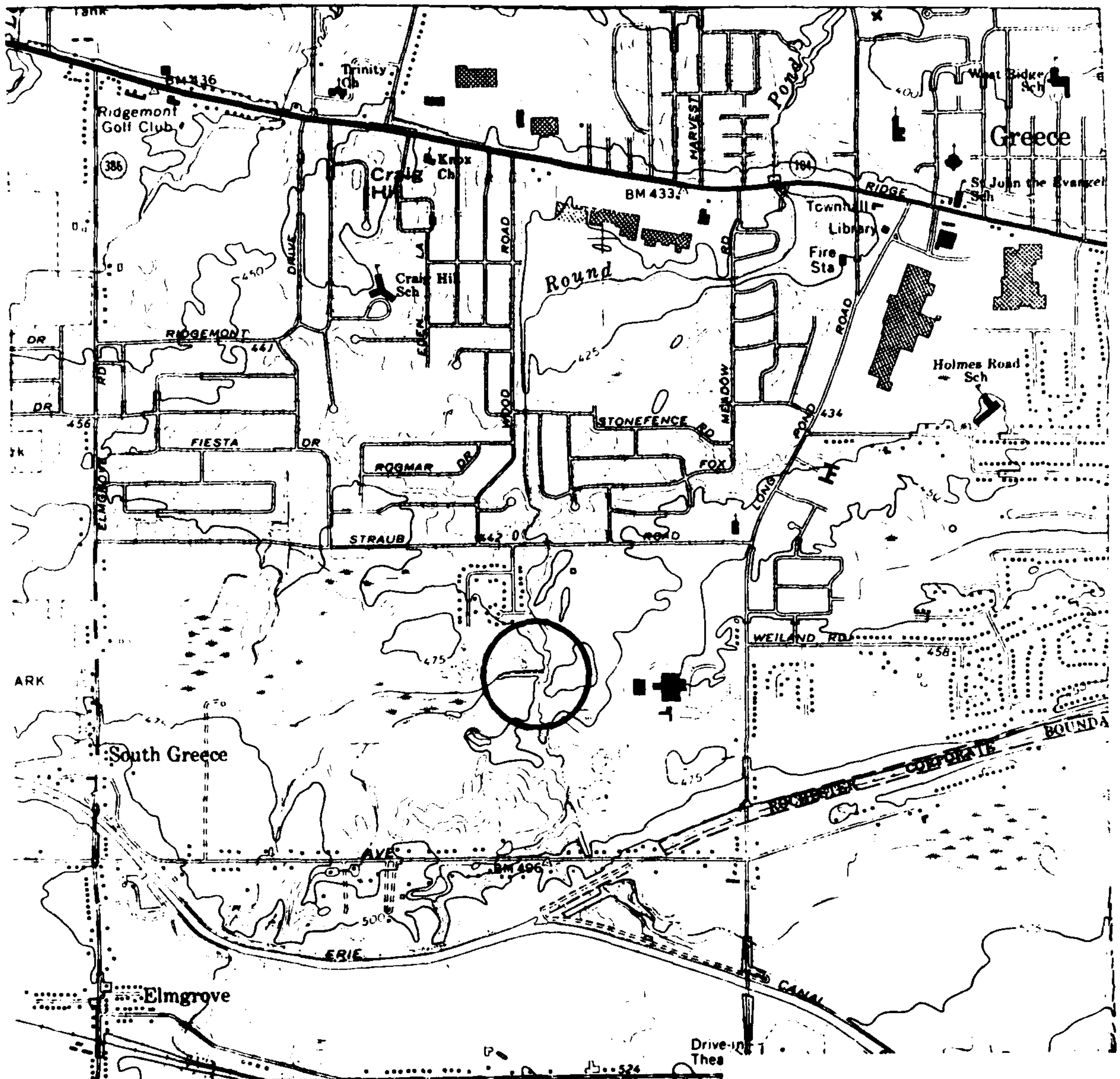
NATURAL PONDING – APPROXIMATE STORAGE CAPABILITY

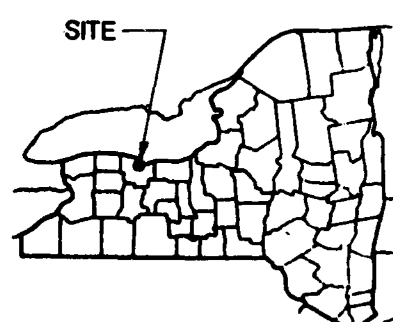
ROUND POND CREEK
DETENTION FACILITY

DATED: 3/9/77

APPENDIX F

DRAWINGS





VICINITY MAP

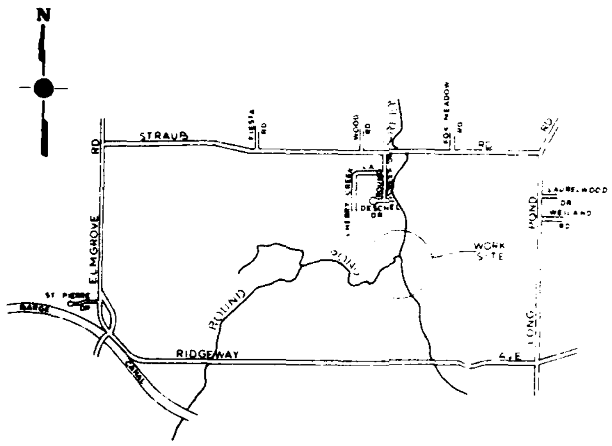
LOCATION PLAN

SCALE 1:2000

CONTRACT FOR CONSTRUCTION OF EARTH DAM AND APPURTENANCES

ROUND POND CREEK STORMWATER DETENTION FACILITY NUMBER ONE–DESCHEL DRIVE

TOWN OF GREECE DRAINAGE DISTRICT NO. 24
MONROE COUNTY, NEW YORK



LOCATION MAP

LIST OF DRAWINGS

PAGE NO.	DESCRIPTION
1	TITLE SHEET
2	SURVEY PLAN
3	PLAN & PROFILE ℄ STA 8+00 to 16+50
4	PLAN & PROFILE ℄ STA 16+50 to 27+00
5	PLAN & PROFILE ℄ STA 27+00 to [illegible]
6	PLAN & PROFILE EMERGENCY SPILLWAY & CHANNEL
7	DISCHARGE CONTROL STRUCTURE PLAN & SECTIONS
8	DISCHARGE CONTROL STRUCTURE SECTION & DETAILS
	DISCHARGE STRUCTURE INLET PLAN, ELEVATION & SECTION
9	DISCHARGE STRUCTURE OUTLET PLAN, ELEVATION & SECTIONS
	EARTH DAM SECTION
10	CHANNEL RELOCATION DETAILS
[illegible]	EMERGENCY SPILLWAY DETAILS
12-21	X-SECTIONS IN EMBANKMENT AREA
22-23	X-SECTIONS EMERGENCY SPILLWAY CHANNEL
24	BORROW AREAS #1 & #2 LOCATION PLAN
[illegible]	X-SECTIONS IN BORROW AREAS #1 & #2

TITLE SHEET

William C. Larsen, P.E.

1 of 26

40A-4241 W. Ontario

FIGURE 2

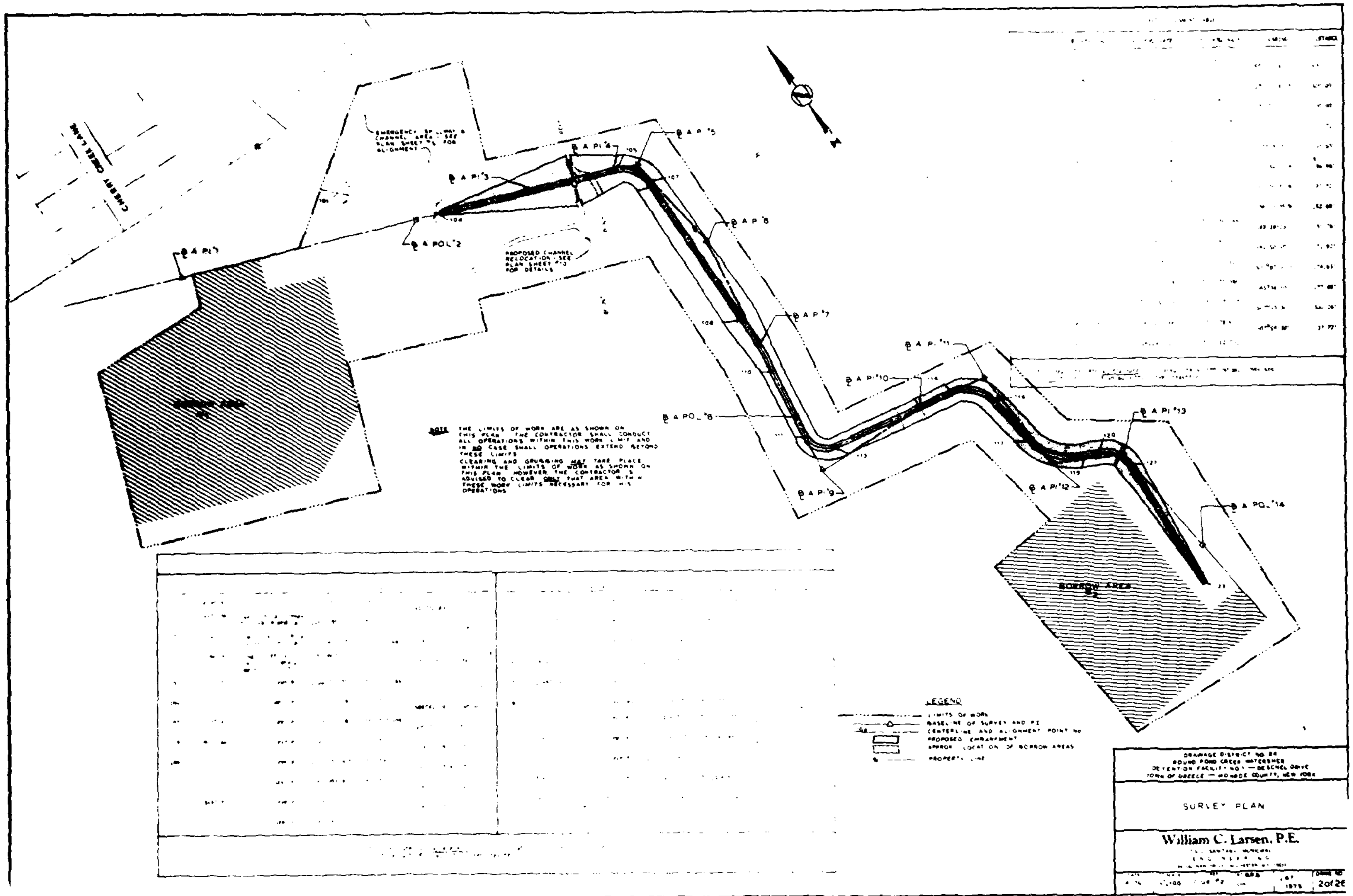

CHERRY CREEK LANE
EMERGENCY SPILLWAY & CHANNEL AREA - SEE PLAN SHEET #5 FOR ALIGNMENT
PROPOSED CHANNEL RELOCATION - SEE PLAN SHEET #13 FOR DETAILS
BORROW AREA
NOTE: THE LIMITS OF WORK ARE AS SHOWN ON THIS PLAN. THE CONTRACTOR SHALL CONDUCT ALL OPERATIONS WITHIN THIS WORK LIMIT AND IN NO CASE SHALL OPERATIONS EXTEND BEYOND THESE LIMITS.
CLEARING AND GRUBBING MAY TAKE PLACE WITHIN THE LIMITS OF WORK AS SHOWN ON THIS PLAN. HOWEVER THE CONTRACTOR IS ADVISED TO CLEAR ONLY THAT AREA WITHIN THESE WORK LIMITS NECESSARY FOR HIS OPERATIONS.
LEGEND
LIMITS OF WORK
BASELINE OF SURVEY AND PI
CENTERLINE AND ALIGNMENT POINT NO
PROPOSED EMBANKMENT
APPROX. LOCATION OF BORROW AREAS
PROPERTY LINE
DRAINAGE DISTRICT NO. 24
ROUND POND CREEK WATERSHED
DETENTION FACILITY NO. 1 — DESCHEL DRIVE
TOWN OF GREECE — MONROE COUNTY, NEW YORK
SURVEY PLAN
William C. Larsen, P.E.
1975
2 of 26

FIGURE 3

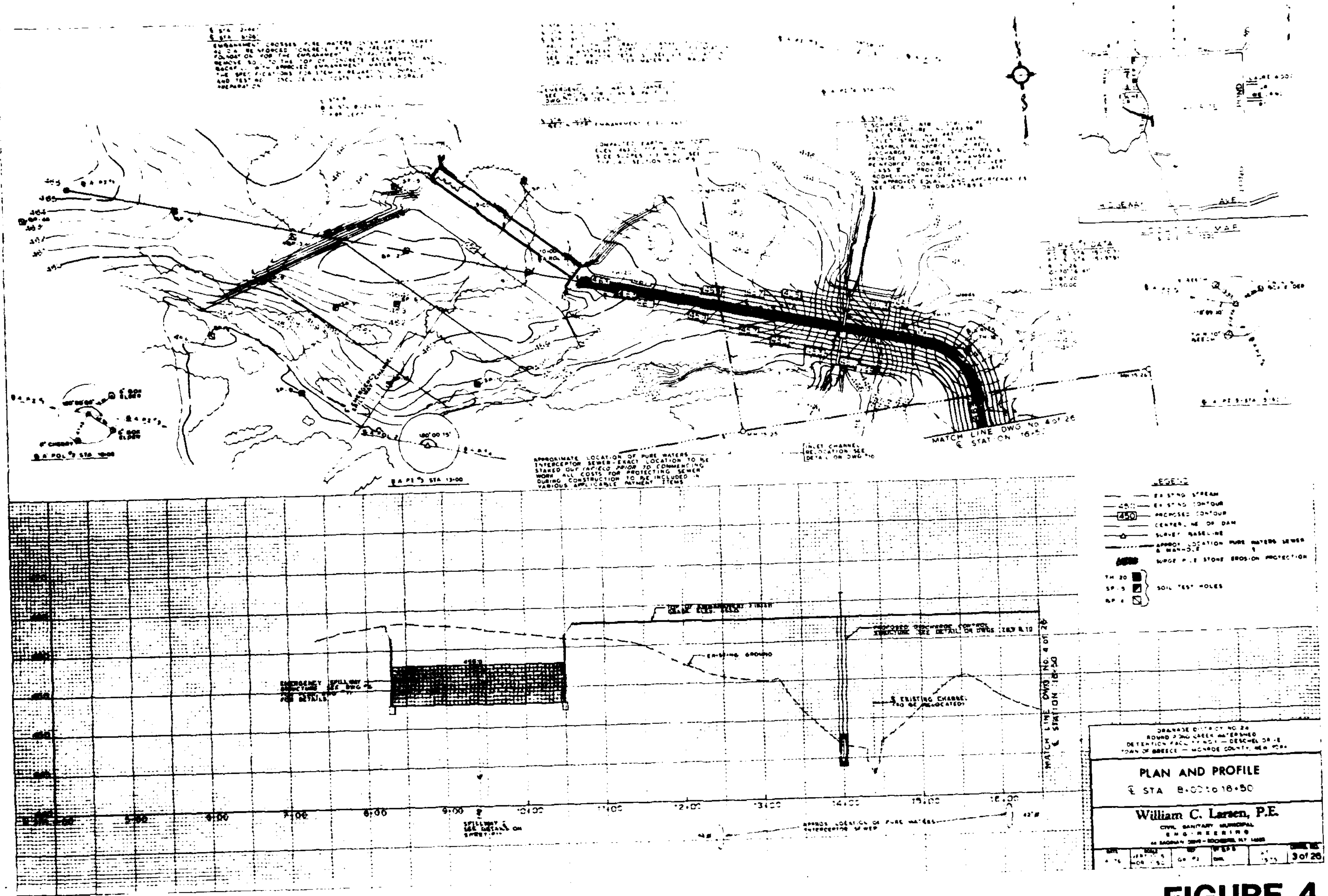

LEGEND
SOIL TEST HOLES
EXISTING GROUND
PLAN AND PROFILE
℄ STA 8+00 to 18+50
William C. Larsen, P.E.
3 of 26

FIGURE 4

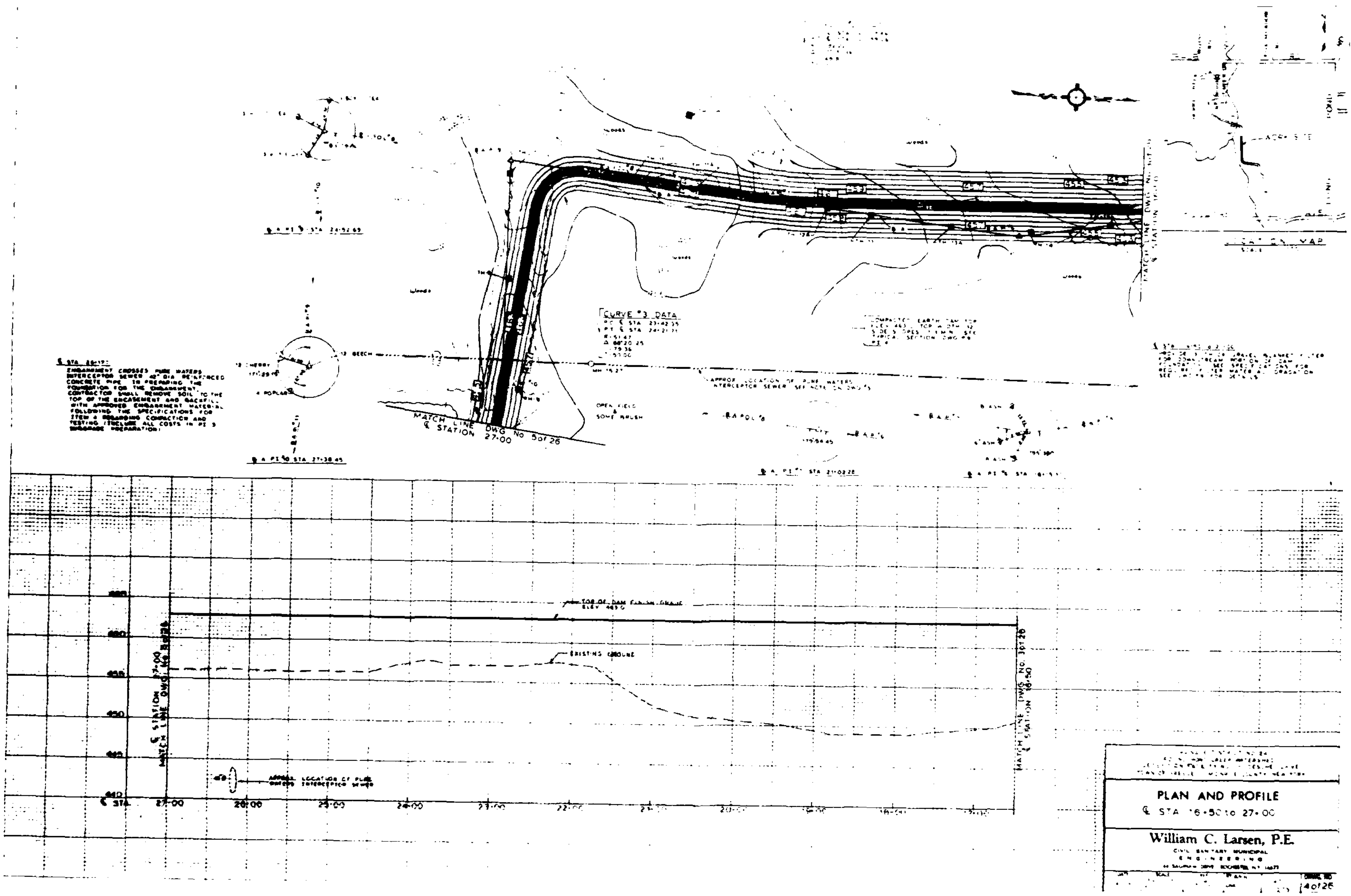

CURVE #3 DATA
MATCH LINE DWG No 5 of 26
℄ STATION 27+00
OPEN FIELD & SOME BRUSH
TOP OF DAM FINISH GRADE ELEV 463.0
EXISTING GROUND
PLAN AND PROFILE
℄ STA 16+50 to 27+00
William C. Larsen, P.E.

FIGURE 5

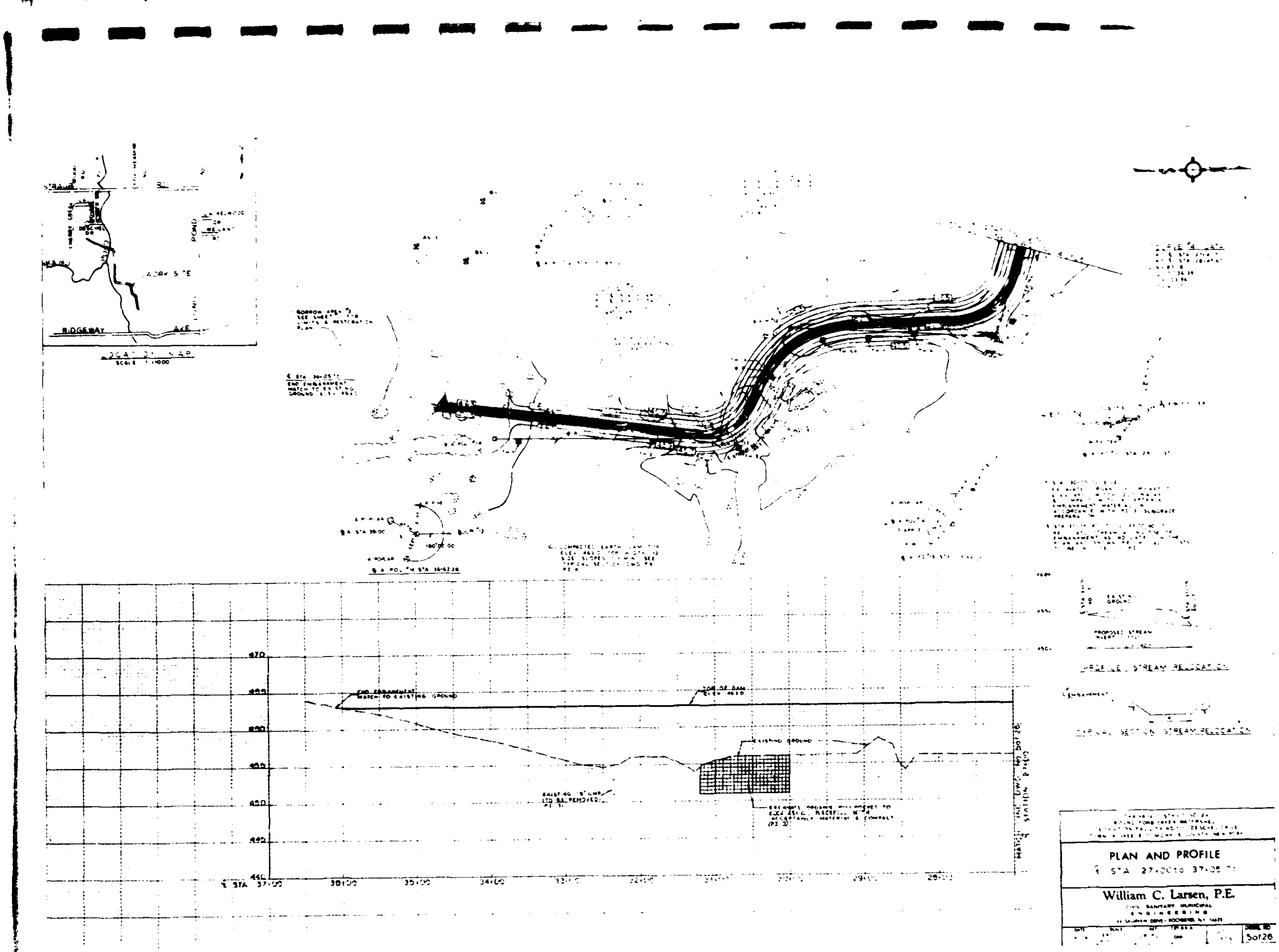

RIDGEWAY
AVE
POND
EXISTING GROUND
TOP OF DAM
PLAN AND PROFILE
William C. Larsen, P.E.
5 of 26

FIGURE 6

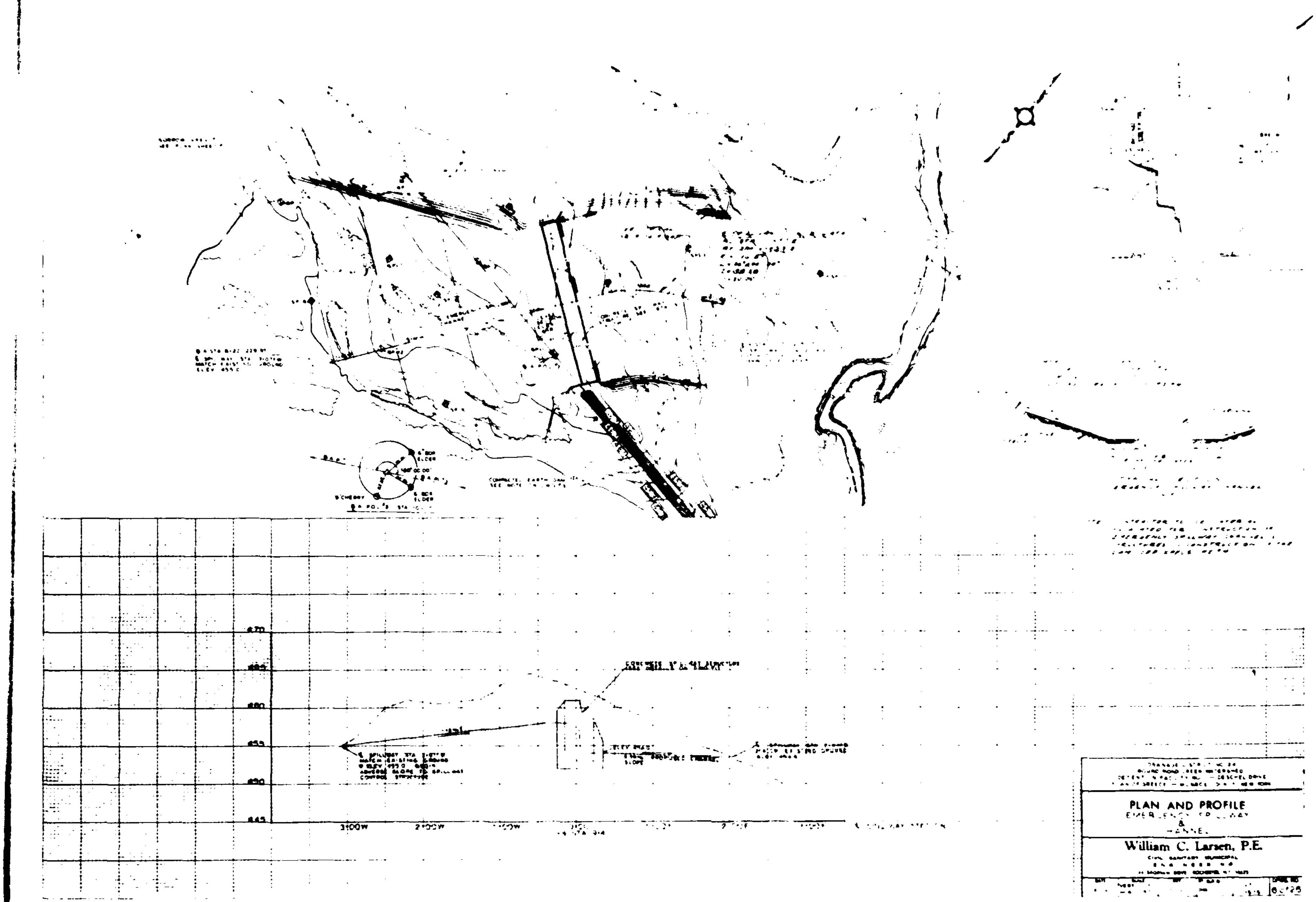

PLAN AND PROFILE
William C. Larsen, P.E.
670
660
655
650
645
3100W
2100W

FIGURE 7

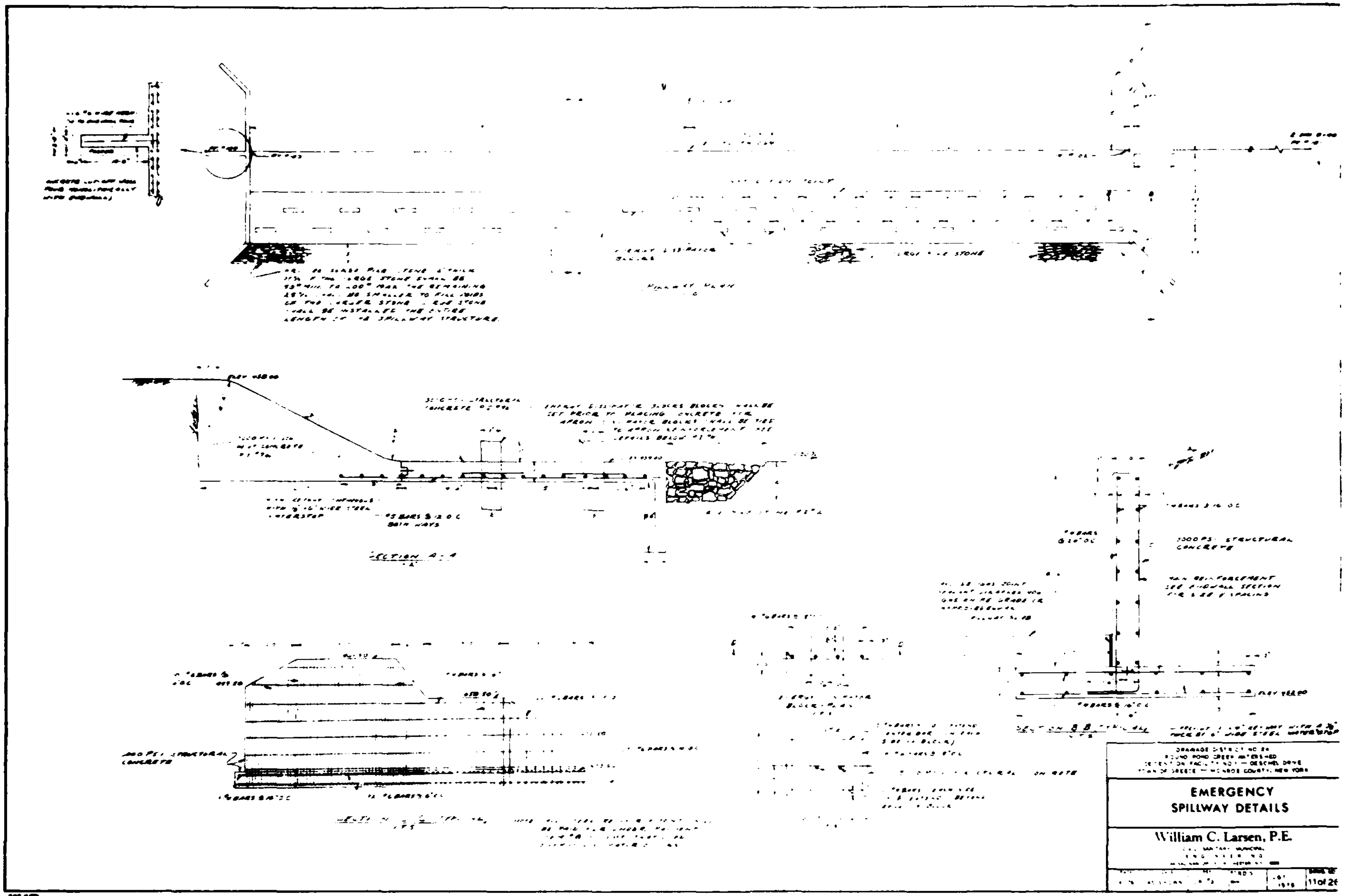

SECTION A-A
SECTION B-B TYPICAL
3000 PSI STRUCTURAL CONCRETE
EMERGENCY
SPILLWAY DETAILS
William C. Larsen, P.E.
11 of 26

FIGURE 8

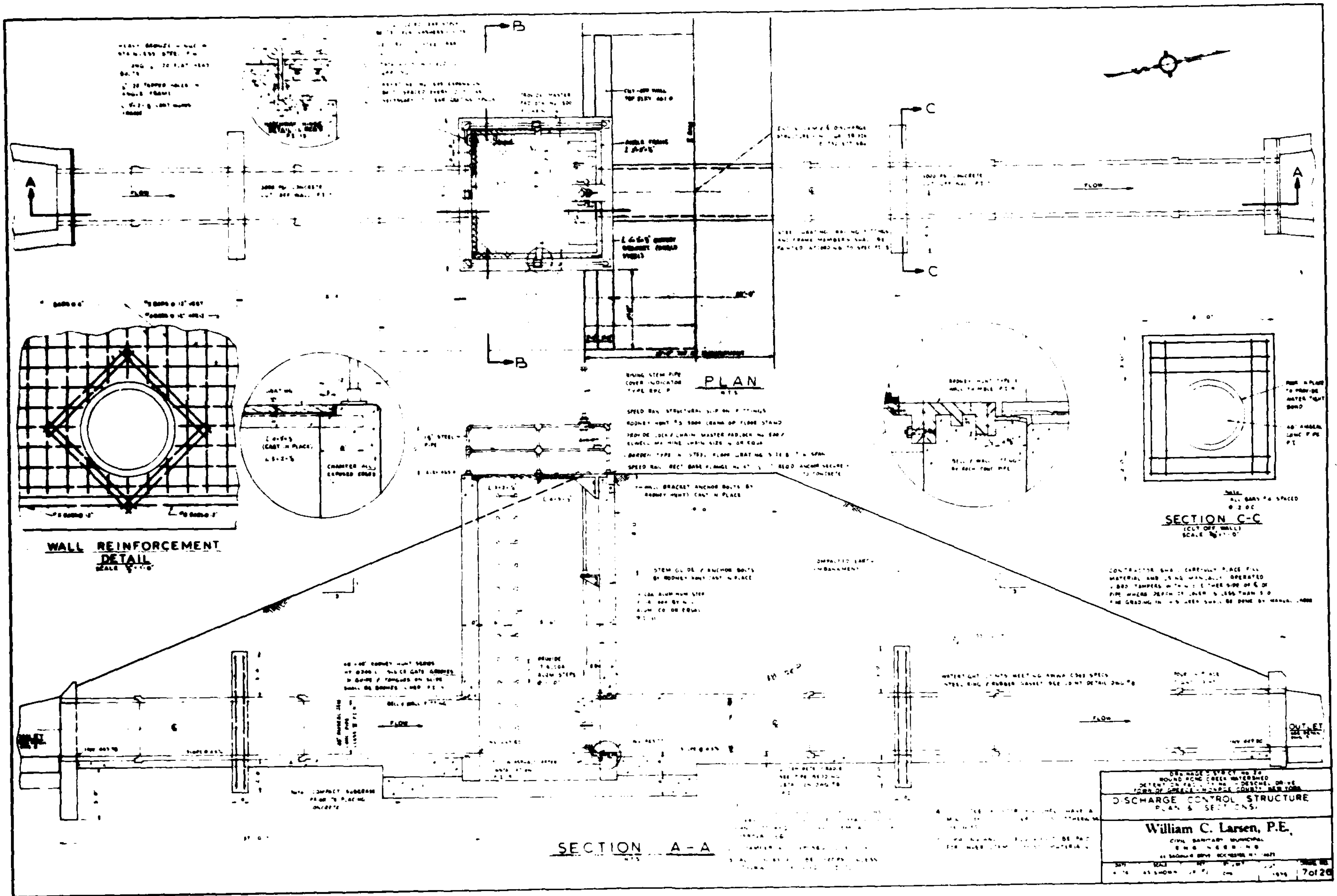

PLAN
SECTION A-A
SECTION C-C
WALL REINFORCEMENT DETAIL
FLOW
INLET
OUTLET
DISCHARGE CONTROL STRUCTURE
PLAN & SECTIONS
William C. Larsen, P.E.
7 of 26

FIGURE 9

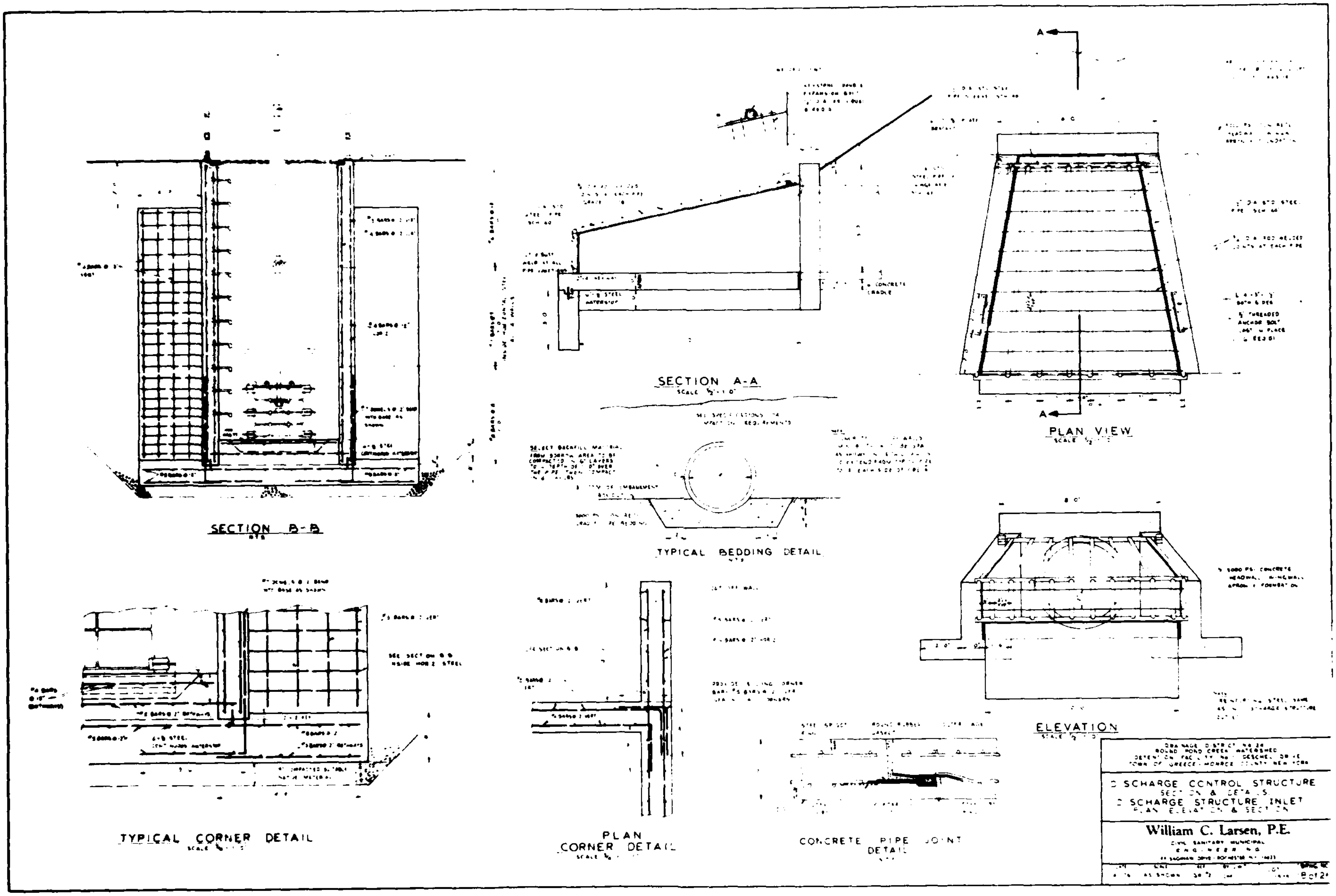

SECTION B-B
TYPICAL CORNER DETAIL
SECTION A-A
TYPICAL BEDDING DETAIL
PLAN
CORNER DETAIL
CONCRETE PIPE JOINT
DETAIL
PLAN VIEW
ELEVATION
DISCHARGE CONTROL STRUCTURE
SECTION & DETAILS
DISCHARGE STRUCTURE INLET
PLAN ELEVATION & SECTION
William C. Larsen, P.E.

FIGURE 10

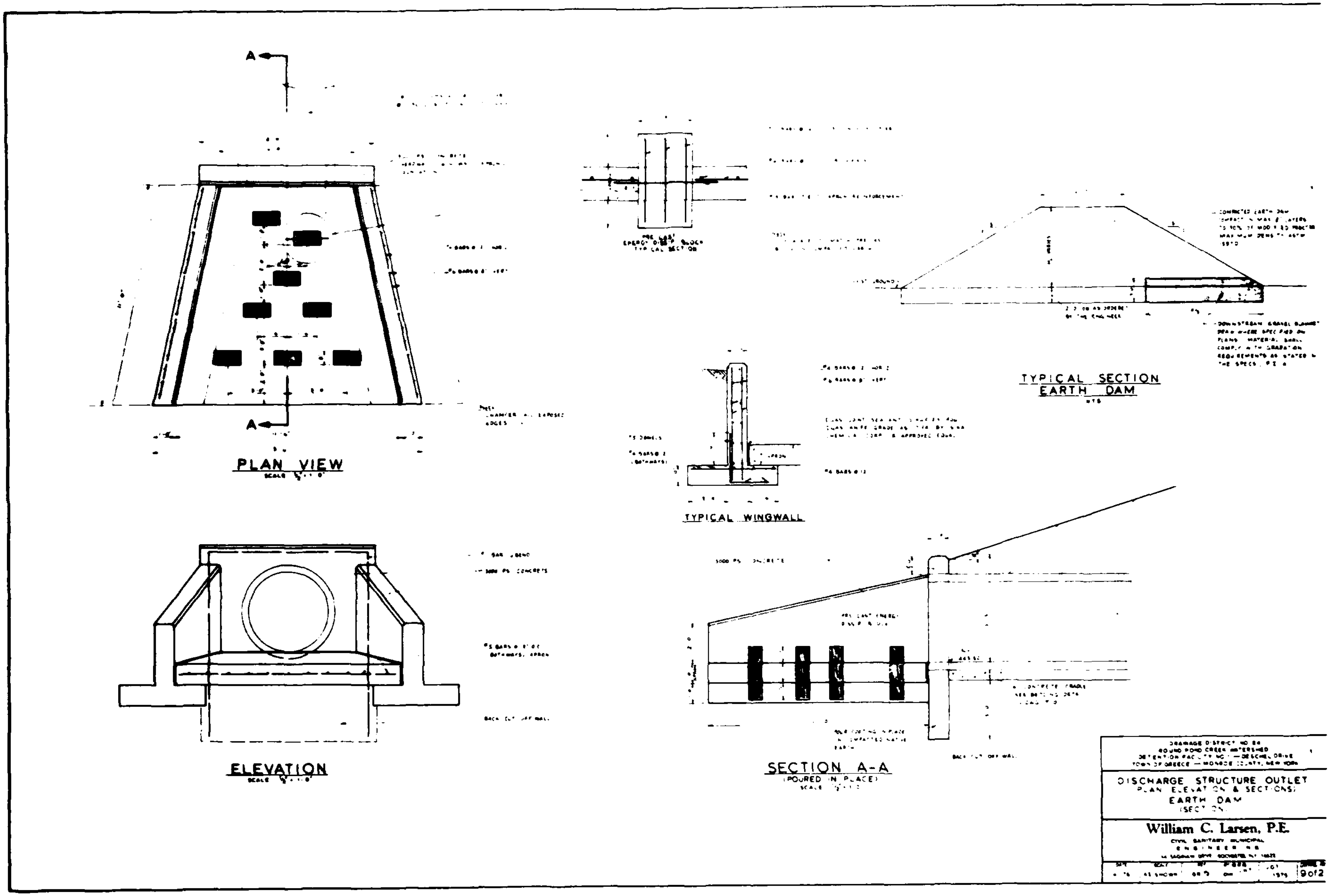

PLAN VIEW
ELEVATION
TYPICAL WINGWALL
TYPICAL SECTION
EARTH DAM
SECTION A-A
(POURED IN PLACE)
A
A
DISCHARGE STRUCTURE OUTLET
PLAN, ELEVATION & SECTIONS
EARTH DAM
William C. Larsen, P.E.
9 of 2

FIGURE 11

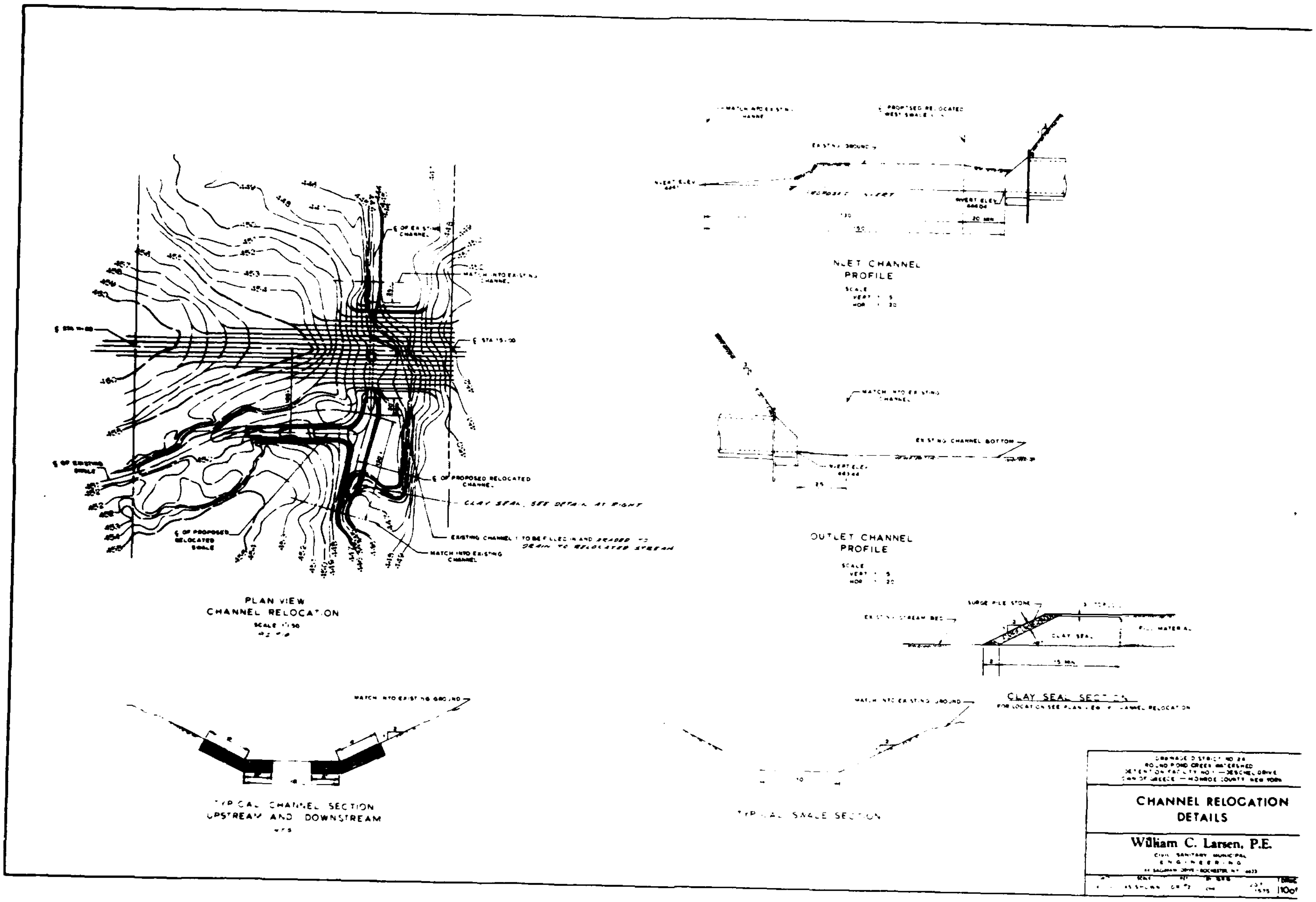

PLAN VIEW
CHANNEL RELOCATION
INLET CHANNEL
PROFILE
OUTLET CHANNEL
PROFILE
EXISTING CHANNEL BOTTOM
CLAY SEAL SECTION
TYPICAL CHANNEL SECTION
UPSTREAM AND DOWNSTREAM
TYPICAL SWALE SECTION
CHANNEL RELOCATION
DETAILS
William C. Larsen, P.E.

FIGURE 12

END

DATE
FILMED

11-81

DTIC